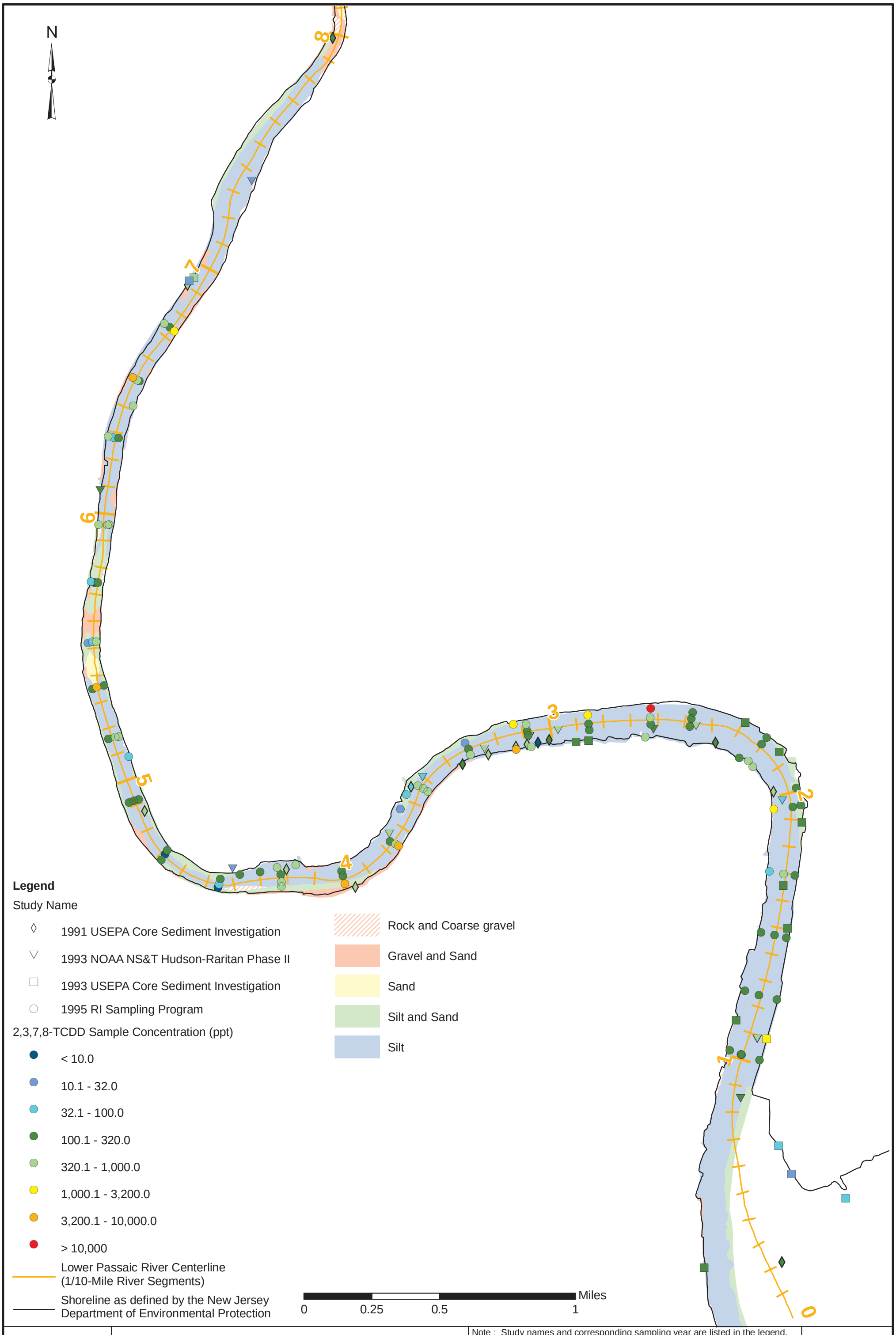
Agency Backcheck
Comprehensive Conceptual Site Model
Lower Passaic River Restoration Project

Chapter 14 Figures



Legend

Study Name

- 1991 USEPA Core Sediment Investigation
- 1993 NOAA NS&T Hudson-Raritan Phase II
- 1993 USEPA Core Sediment Investigation
- 1995 RI Sampling Program

2,3,7,8-TCDD Sample Concentration (ppt)

- < 10.0
- 10.1 - 32.0
- 32.1 - 100.0
- 100.1 - 320.0
- 320.1 - 1,000.0
- 1,000.1 - 3,200.0
- 3,200.1 - 10,000.0
- > 10,000

Lower Passaic River Centerline (1/10-Mile River Segments)

Shoreline as defined by the New Jersey Department of Environmental Protection

- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

0 0.25 0.5 1 Miles

Map Document: (S:\Projects\PASSAIC\MapDocuments\4553001-CERCLA\2,3,7,8-TCDD_Surficial_Sed_91_95_Samples.mxd)
9/8/2008 -- 2:39:08 PM

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2,3,7,8-TCDD Surface Sediment Samples from 1991 to 1995

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-1a

2009

N

Rock and Coarse gravel

Gravel and Sand

Sand

Silt and Sand

Silt

Legend

Study Name

1991 USEPA Core Sediment Investigation
(Total PCB as reported by the laboratory as sum of Aroclors)

1993 USEPA Core Sediment Investigation
(Total PCB as reported by the laboratory as sum of Aroclors)

1995 RI Sampling Program
(Total PCB calculated as the sum of Aroclor 1248, 1254, and 1260)

Total PCB Surface Concentration (ppb)

< 100.0

100.1 - 320.0

320.1 - 1000.0

1000.1 - 3200.0

3200.1 - 10000.0

> 10000.0

Lower Passaic River Centerline
(1/10-Mile River Segments)

Shoreline as defined by the New Jersey
Department of Environmental Protection

8 7 6 5 4 3 2 1 0

Miles
0 0.125 0.25 0.5

US Army Corps of Engineers

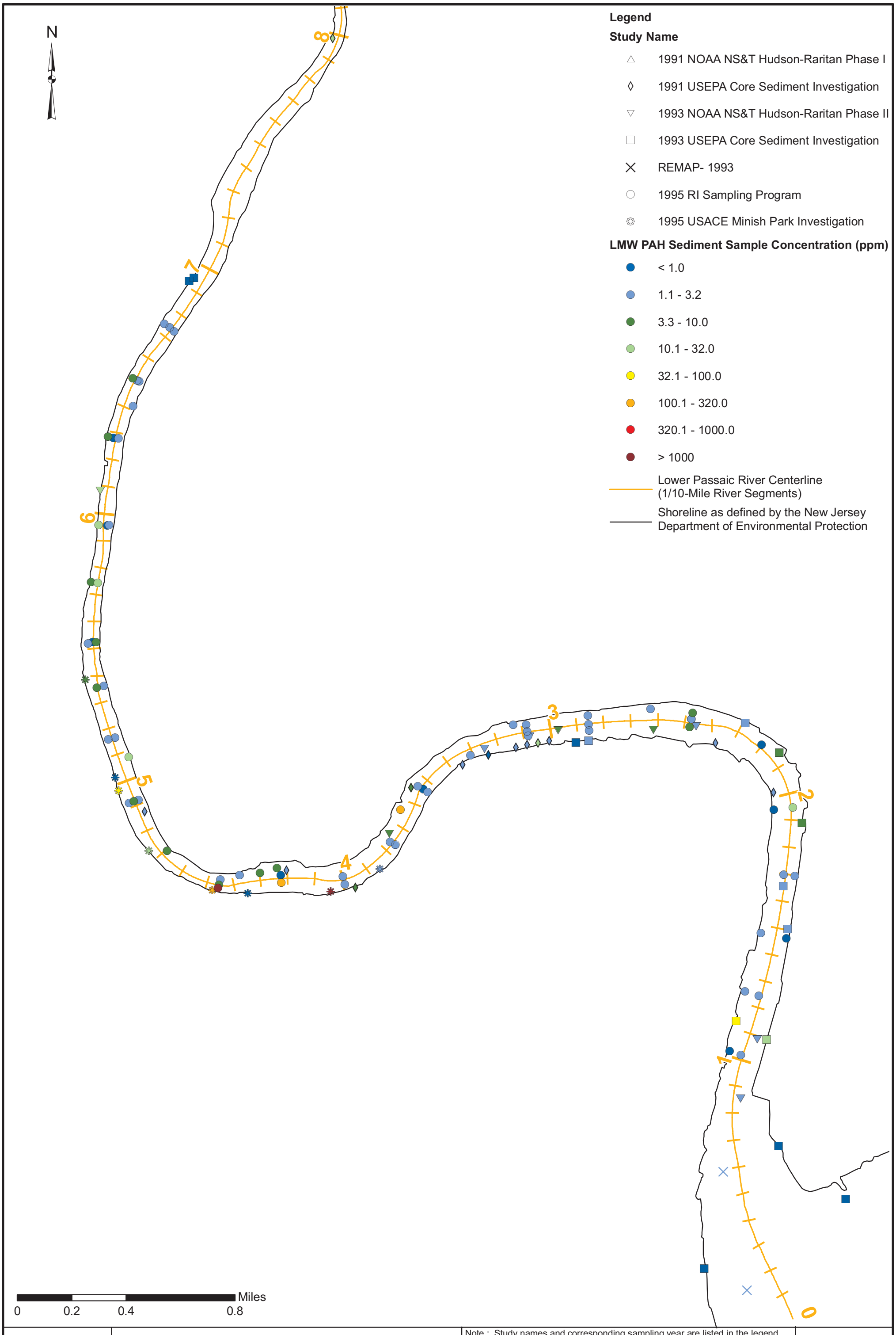
Total PCB Surface Sediment Samples from 1991 to 1995

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-1b

2009



LMW PAH Surface Sediment Samples from 1991 to 1995

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-1c

2009

N

Legend

Study Name

- 1991 NOAA NS&T Hudson-Raritan Phase I
- 1991 USEPA Core Sediment Investigation
- 1993 NOAA NS&T Hudson-Raritan Phase II
- 1993 USEPA Core Sediment Investigation
- REMAP- 1993
- 1995 RI Sampling Program
- 1995 USACE Minish Park Investigation

HMW PAH Sediment Surface Concentration (ppm)

- < 10.0
- 10.1 - 32.0
- 32.1 - 100.0
- 100.1 - 320.0
- 320.1 - 1000.0
- > 1000.0
- Lower Passaic River Centerline (1/10-Mile River Segments)
- Shoreline as defined by the New Jersey Department of Environmental Protection

Miles
0 0.25 0.5 1

US Army Corps of Engineers®

HMW PAH Surface Sediment Samples from 1991 to 1995

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-1d

2009

N

Legend

Study Name

- 1991 NOAA NS&T Hudson-Raritan Phase I
- 1991 USEPA Core Sediment Investigation
- 1993 NOAA NS&T Hudson-Raritan Phase II
- 1993 USEPA Core Sediment Investigation
- REMAP- 1993
- 1995 RI Sampling Program
- 1995 USACE Minish Park Investigation

4,4'-DDX Sample Concentration (ppb)

- < 10.00
- 10.01 - 32.00
- 32.01 - 100.00
- 100.01 - 320.00
- 320.01 - 1000.00
- > 1000

Lower Passaic River Centerline (1/10-Mile River Segments)

Shoreline as defined by the New Jersey Department of Environmental Protection

8 7 6 5 4 3 2 1 0

Miles

0 0.25 0.5 1

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4,4'-DDX Surface Sediment Samples from 1991 to 1995

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-1e

2009

N

Legend

Study Name

- 1991 USEPA Core Sediment Investigation
- 1993 NOAA NS&T Hudson-Raritan Phase II
- 1993 USEPA Core Sediment Investigation
- 1995 RI Sampling Program
- 1995 USACE Minish Park Investigation

Chlordane Sample Concentration (ppb)

- < 1.00
- 1.01 - 3.20
- 3.21 - 10.00
- 10.01 - 32.00
- 32.01 - 100.00
- > 100.00
- Lower Passaic River Centerline (1/10-Mile River Segments)
- Shoreline as defined by the New Jersey Department of Environmental Protection

8 7 6 5 4 3 2 1 0

Miles
0 0.25 0.5 1

US Army Corps of Engineers®

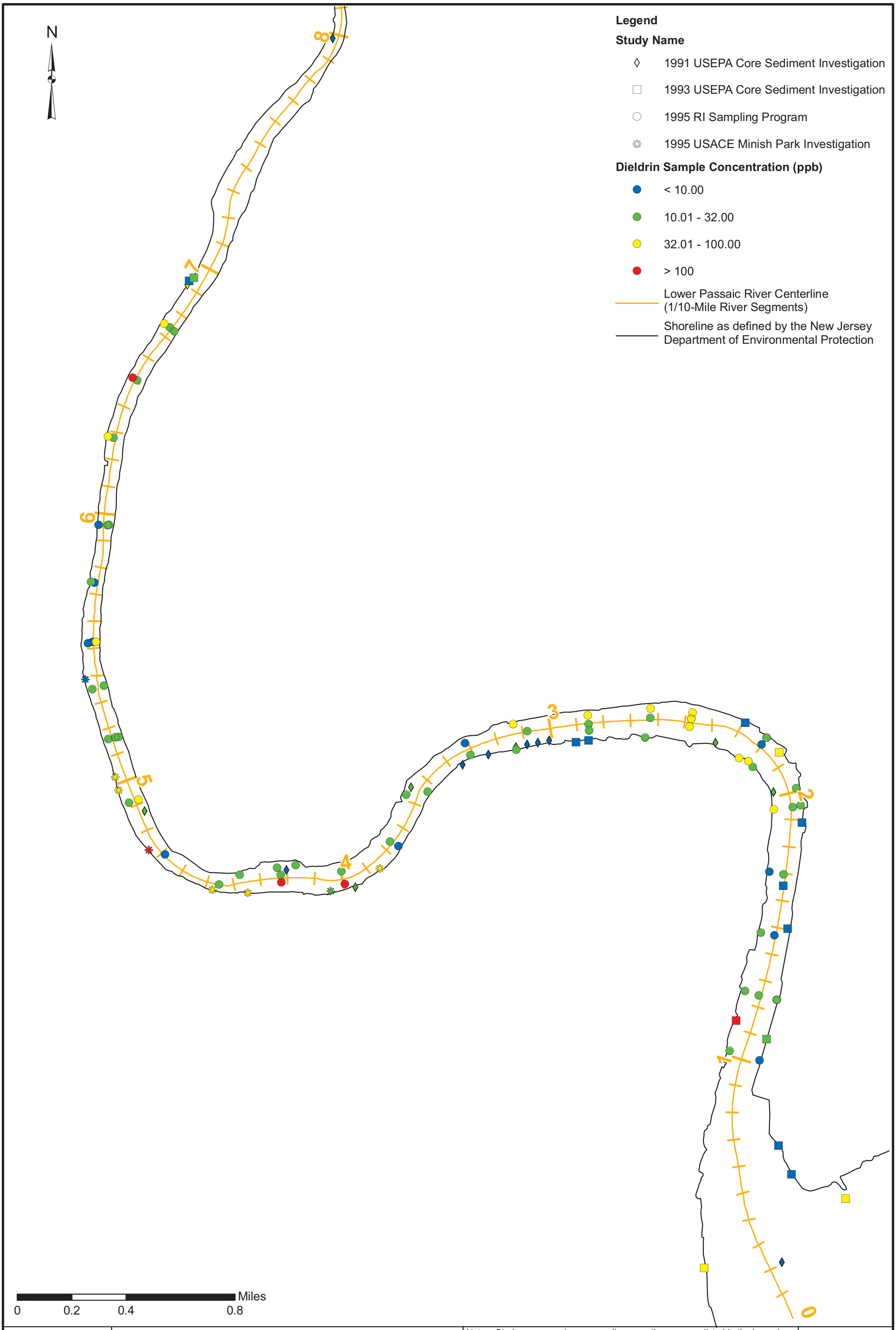
Total Chlordane Surface Sediment Samples from 1991 to 1995

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-1f

2009



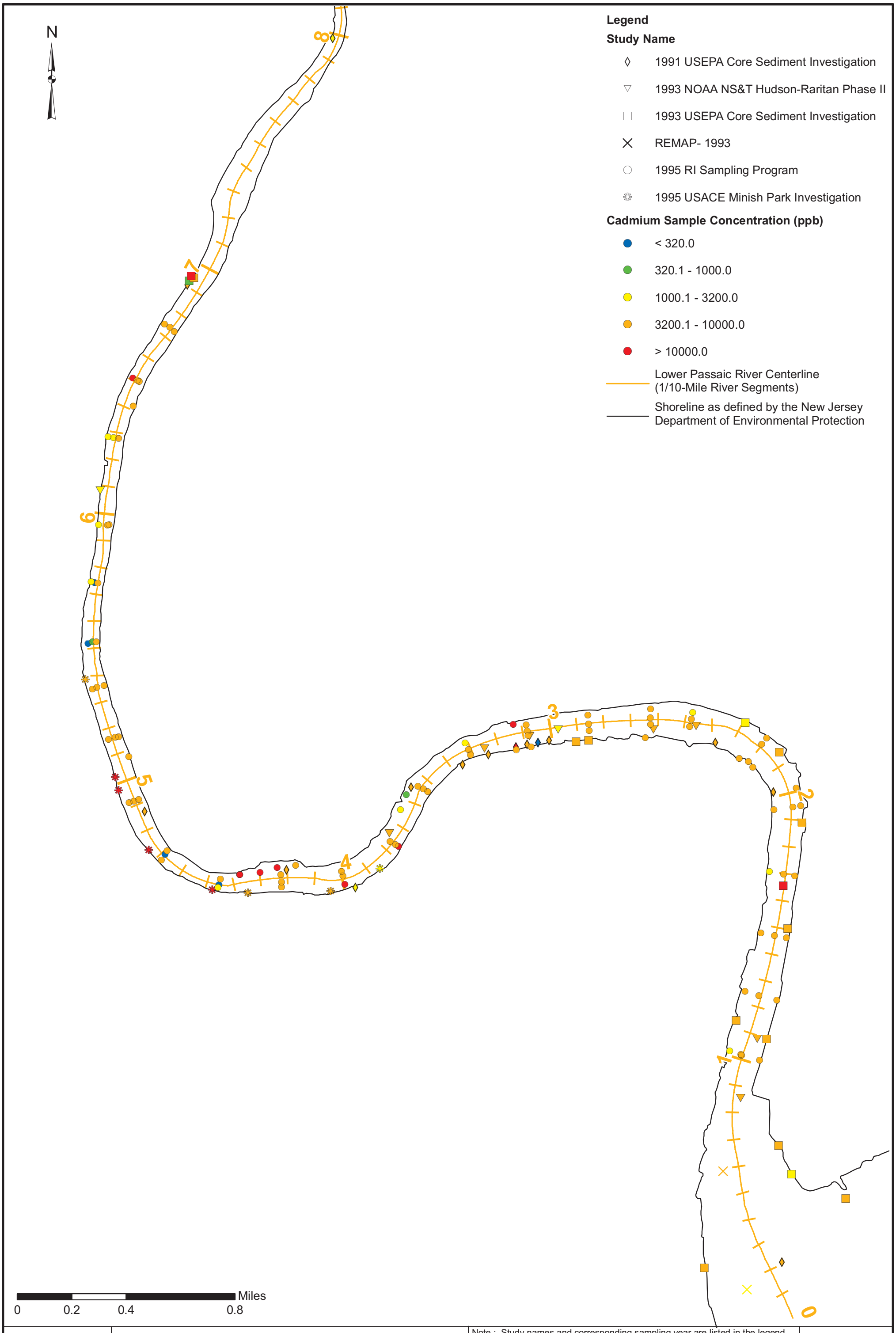
Dieldrin Surface Sediment Samples from 1991 to 1995

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-1g

2009



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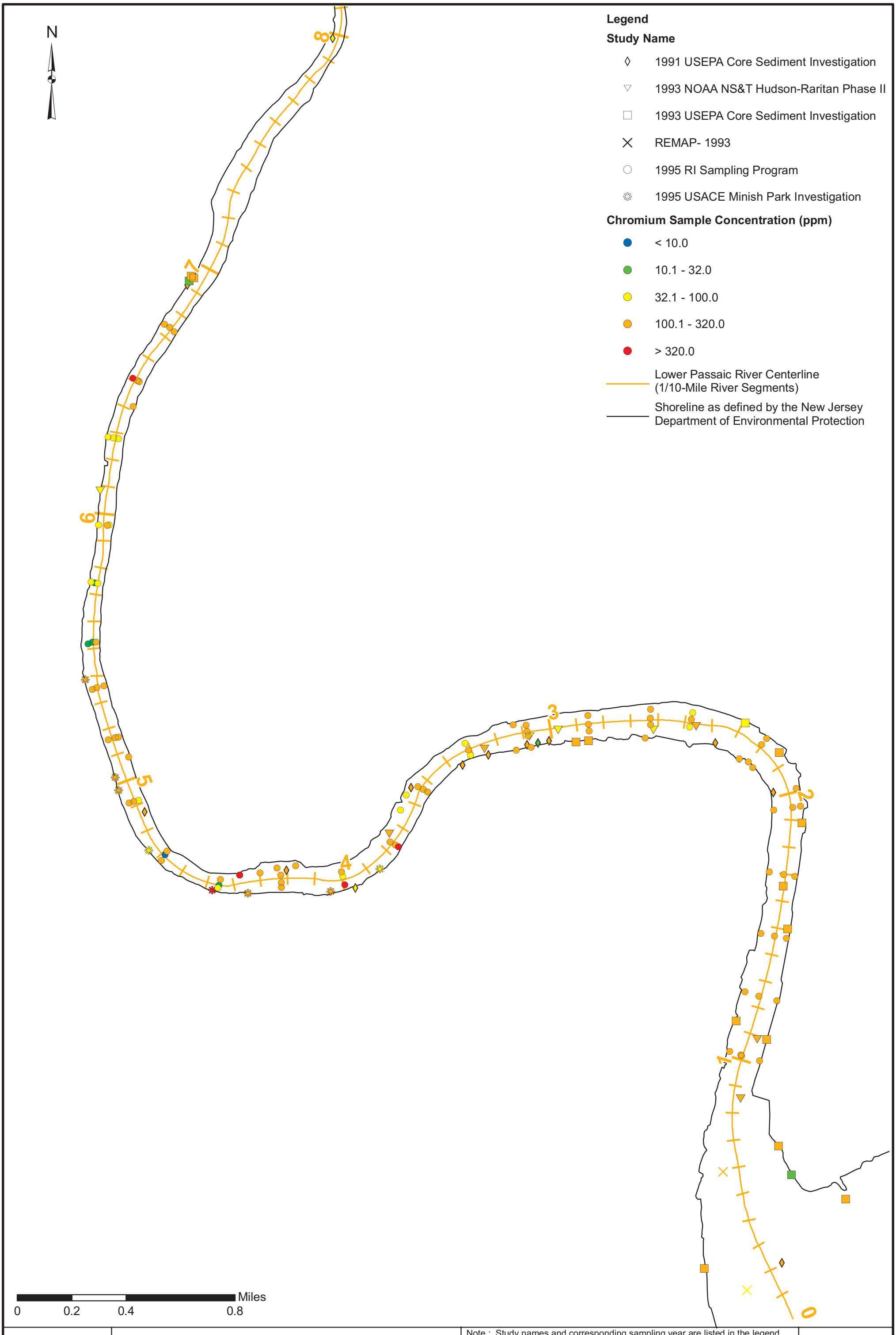
Cadmium Surface Sediment Samples from 1991 to 1995

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-1h

2009



Chromium Surface Sediment Samples from 1991 to 1995

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-1i

2009

N

Legend

Study Name

- 1991 USEPA Core Sediment Investigation
- 1993 NOAA NS&T Hudson-Raritan Phase II
- 1993 USEPA Core Sediment Investigation
- REMAP- 1993
- 1995 RI Sampling Program
- 1995 USACE Minish Park Investigation

Copper Sample Concentration (ppm)

- < 1.0
- 1.1 - 3.2
- 3.3 - 10.0
- 10.1 - 32.0
- 32.1 - 100.0
- 100.1 - 320.0
- 320.1 - 1000.0
- > 1000.0

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Shoreline as defined by the New Jersey Department of Environmental Protection

8 7 6 5 4 3 2 1 0

Miles
0 0.2 0.4 0.8

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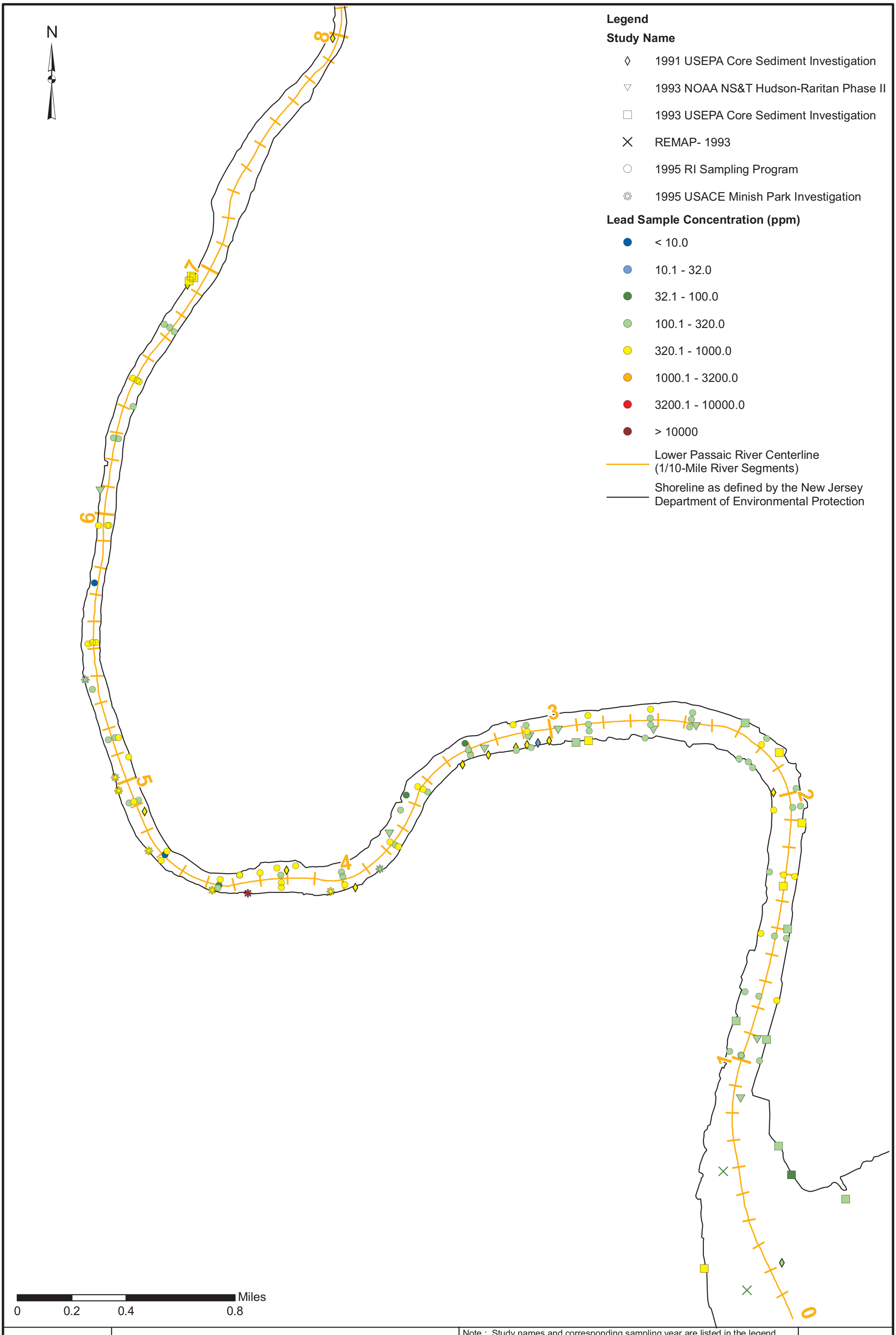
Copper Surface Sediment Samples from 1991 to 1995

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-1j

2009



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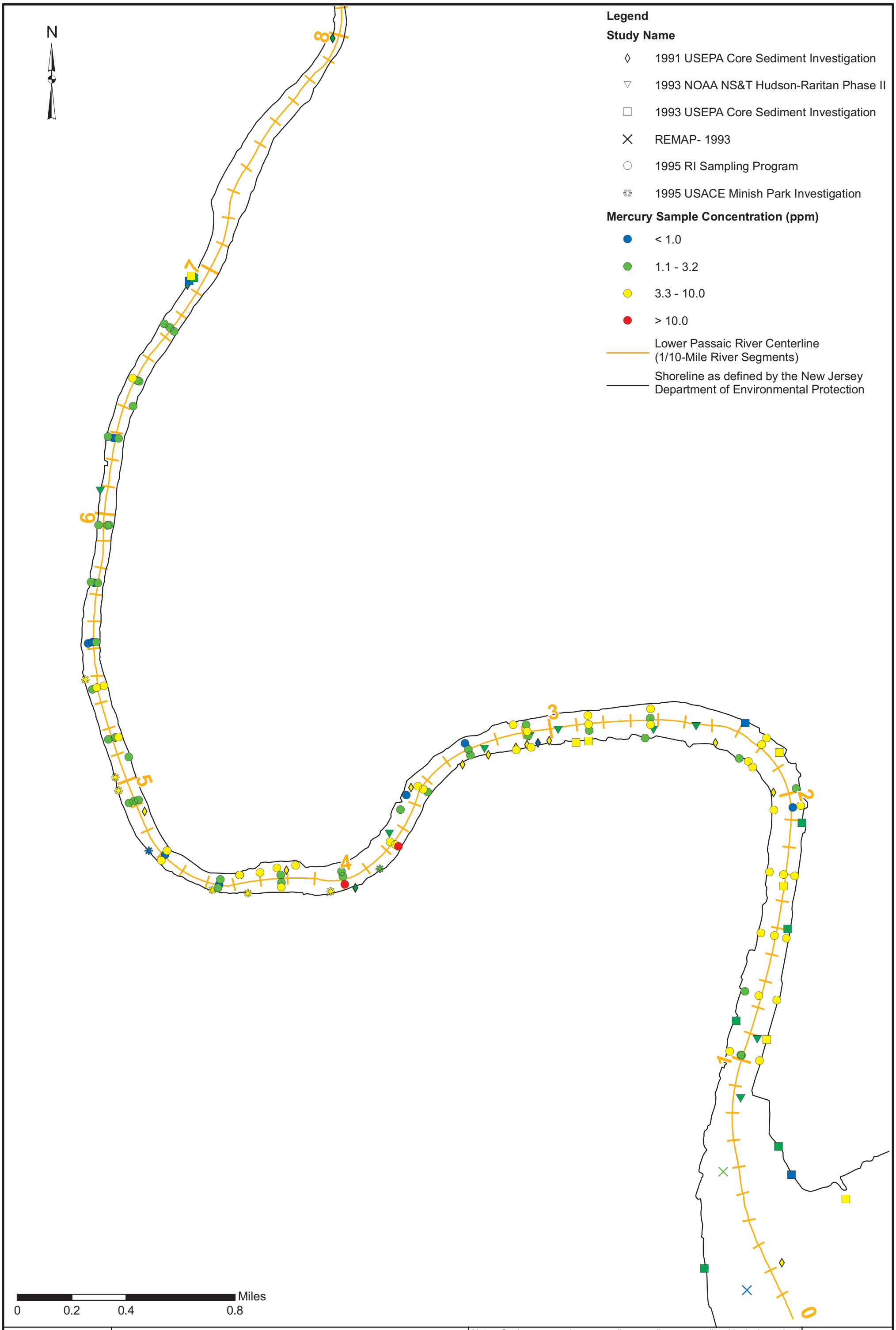
Lead Surface Sediment Samples from 1991 to 1995

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-1k

2009



Mercury Surface Sediment Samples from 1991 to 1995

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-1l

2009

N

Legend

Study Name

- NOAA NS&T Hudson-Raritan Phase II- 1993
- 1991 USEPA Core Sediment Investigation
- 1993 USEPA Core Sediment Investigation
- 1995 RI Sampling Program

Dioxin Bird TEQ (ppb)

- < 0.10
- 0.11 - 0.32
- 0.33 - 1.00
- 1.01 - 3.20
- 3.21 - 10.00
- > 10.00
- Lower Passaic River Centerline (1/10-Mile River Segments)
- Shoreline as defined by the New Jersey Department of Environmental Protection

0 0.25 0.5 1 Miles

Dioxin Bird Toxic Equivalency Quotient for Sediment Samples from 1991 to 1995

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-1m

2009

N

Legend

Study Name

- NOAA NS&T Hudson-Raritan Phase II- 1993
- 1991 USEPA Core Sediment Investigation
- 1993 USEPA Core Sediment Investigation
- 1995 RI Sampling Program

Dioxin FIsh TEQ (ppb)

- < 0.10
- 0.11 - 0.32
- 0.33 - 1.00
- 1.01 - 3.20
- 3.21 - 10.00
- > 10.00
- Lower Passaic River Centerline (1/10-Mile River Segments)
- Shoreline as defined by the New Jersey Department of Environmental Protection

0 0.25 0.5 1 Miles

US Army Corps of Engineers

Dioxin Fish Toxic Equivalency Quotient for Sediment Samples from 1991 to 1995

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-1n

2009

N

Legend

Study Name

- NOAA NS&T Hudson-Raritan Phase II- 1993
- 1991 USEPA Core Sediment Investigation
- 1993 USEPA Core Sediment Investigation
- 1995 RI Sampling Program

Dioxin Mammal TEQ (ppb)

- < 0.10
- 0.11 - 0.32
- 0.33 - 1.00
- 1.01 - 3.20
- 3.21 - 10.00
- > 10.00
- Lower Passaic River Centerline (1/10-Mile River Segments)
- Shoreline as defined by the New Jersey Department of Environmental Protection

0 0.25 0.5 1 Miles

US Army Corps of Engineers

Dioxin Mammal Toxic Equivalency Quotient for Sediment Samples from 1991 to 1995

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-1o

2009

N

Legend

- 1999 Sediment Sampling Program
- 1999 Late Summer/ Early Fall Environmental Sampling Program
- 1999/2000 Minish Park Monitoring Program
- 2000 Spring Environmental Sampling Program

2,3,7,8-TCDD Sample Concentration (ppt)

- < 320.0
- 320.1 - 1000.0
- 1000.1 - 3200.0
- > 3200

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Shoreline as defined by the New Jersey Department of Environmental Protection

8 7 6 5 4 3 2 1 0

Miles
0 0.25 0.5 1

US Army Corps of Engineers

2,3,7,8-TCDD Surface Sediment Samples from 1999 to 2000

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-2a

2009

N

8

7

6

5

4

3

2

1

0

Legend

Study Name

- 1999 Sediment Sampling Program
- 1999 Late Summer/ Early Fall Environmental Sampling Program
- 1999/2000 Minish Park Monitoring Program
- 2000 Spring Environmental Sampling Program

Total PCB Surface Concentration (ppb)*

- < 320.0
- 320.1-1000.0
- 1000.1-3200.0
- > 3200.0
- Lower Passaic River Centerline (1/10-Mile River Segments)
- Shoreline as defined by the New Jersey Department of Environmental Protection

* Note: Total PCB concentration was estimated based on the sum of the reported 10 congeners multiplied by 17.8. This factor was based on correlation analysis between the 1999-2000 dataset and the average Total PCB concentration in the 1999-2000 horizons of the dated high resolution sediment cores collected in 2005.

Miles

0 0.25 0.5 1

US Army Corps of Engineers

Total PCB Sediment Samples from 1999 to 2000

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-2b

2009

N

Legend

Study Name

- 1999 Late Summer/ Early Fall Environmental Sampling Program
- 1999/2000 Minish Park Monitoring Program
- 2000 Spring Environmental Sampling Program
- Lower Passaic River Centerline (1/10-Mile River Segments)
- Shoreline as defined by the New Jersey Department of Environmental Protection

LMW PAH Sample Concentration (ppm)

- < 3.20
- 3.21 - 10.00
- 10.01 - 32.00
- > 32.00

8 7 6 5 4 3 2 1 0

0 0.25 0.5 1 Miles

US Army Corps of Engineers

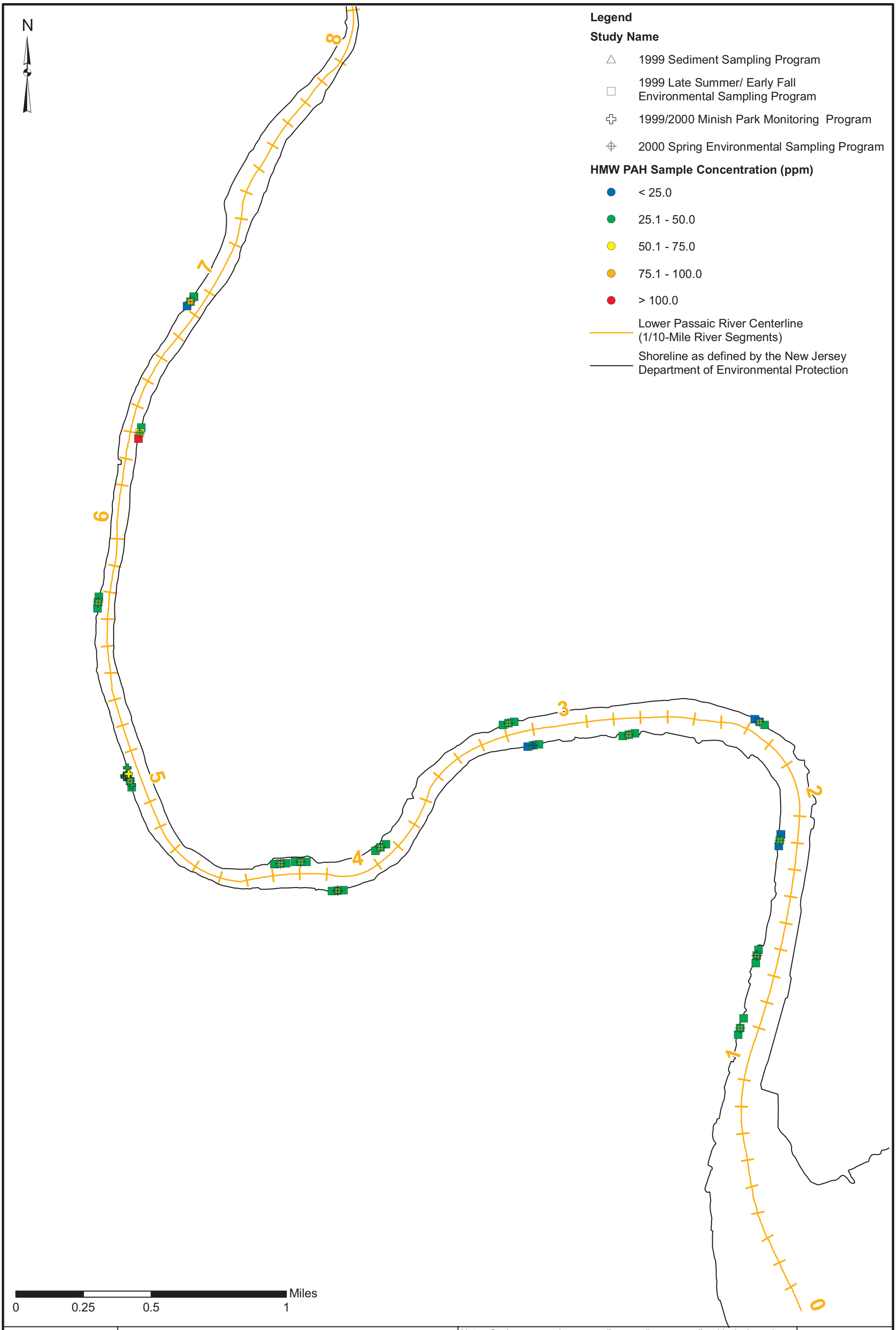
Total LMW PAH Surface Sediment Samples from 1999 to 2000

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-2c

2009



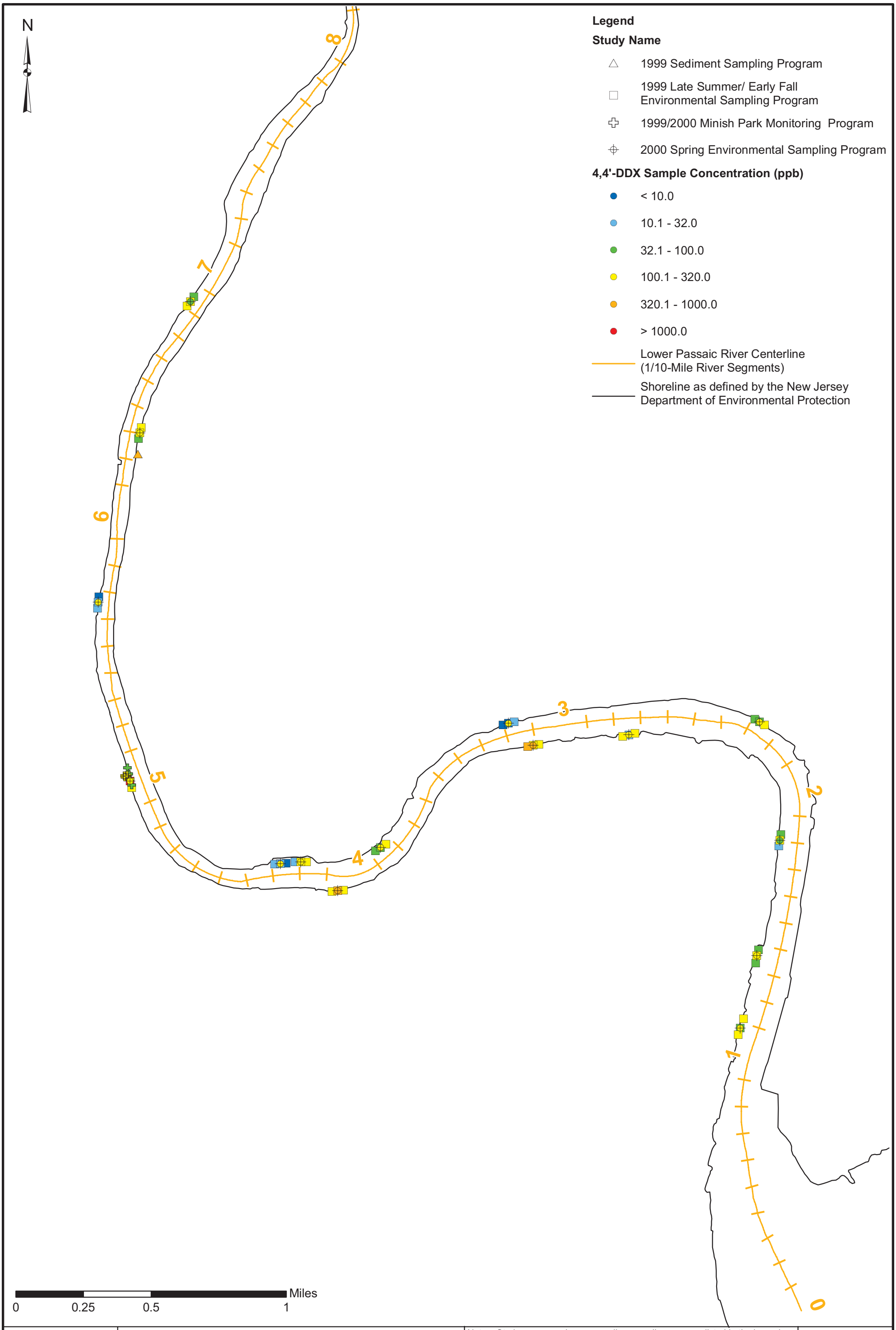
Total HMW PAH Surface Sediment Samples from 1999 to 2000

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-2d

2009



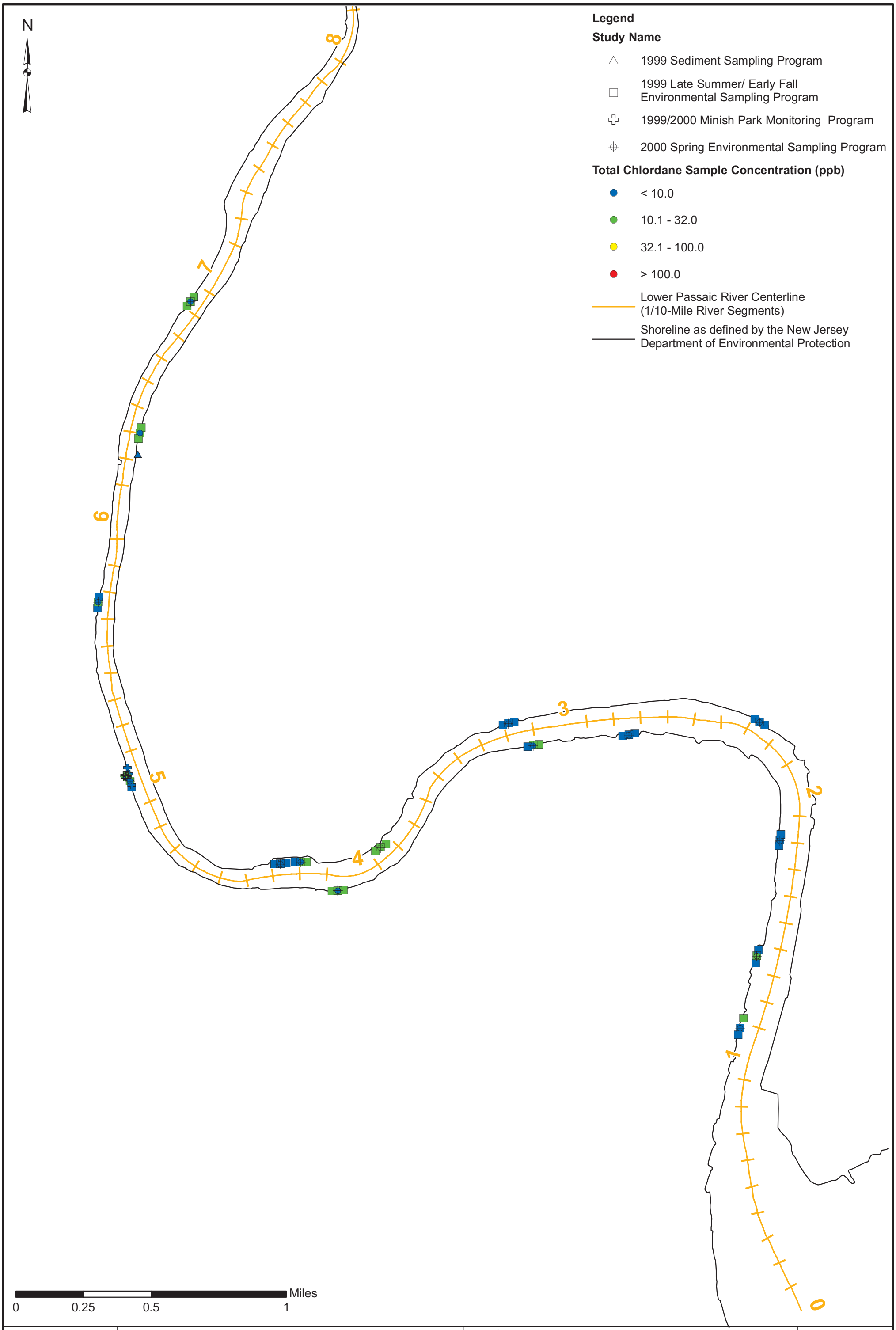
Total 4,4'-DDX Surface Sediment Samples from 1999 to 2000

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-2e

2009



Total Chlordane Surface Sediment Samples from 1999 to 2000

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-2f

2009

N

8
7
6
5
4
3
2
1
0

Legend

Study Name

- 1999 Sediment Sampling Program
- 1999 Late Summer/ Early Fall Environmental Sampling Program
- 1999/2000 Minish Park Monitoring Program
- 2000 Spring Environmental Sampling Program

Dieldrin Sample Concentration (ppb)

- < 5.0
- 5.1 - 10.0
- 10.1 - 15.0
- 15.1 - 20.0
- 20.1 - 25.0
- > 25.0
- Lower Passaic River Centerline (1/10-Mile River Segments)
- Shoreline as defined by the New Jersey Department of Environmental Protection

Miles
0 0.25 0.5 1

US Army Corps of Engineers

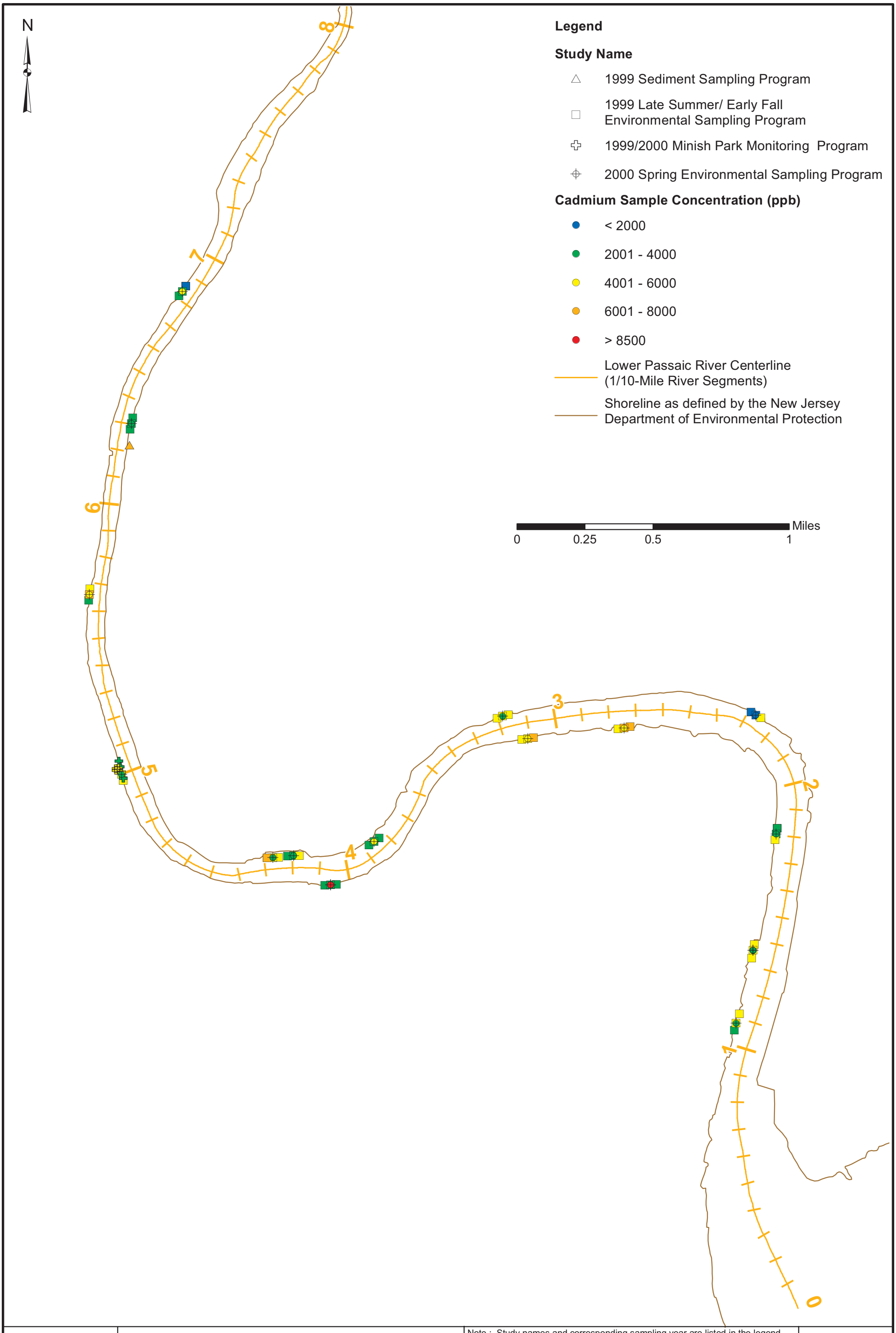
Dieldrin Sediment Samples from 1999 to 2000

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-2g

2009



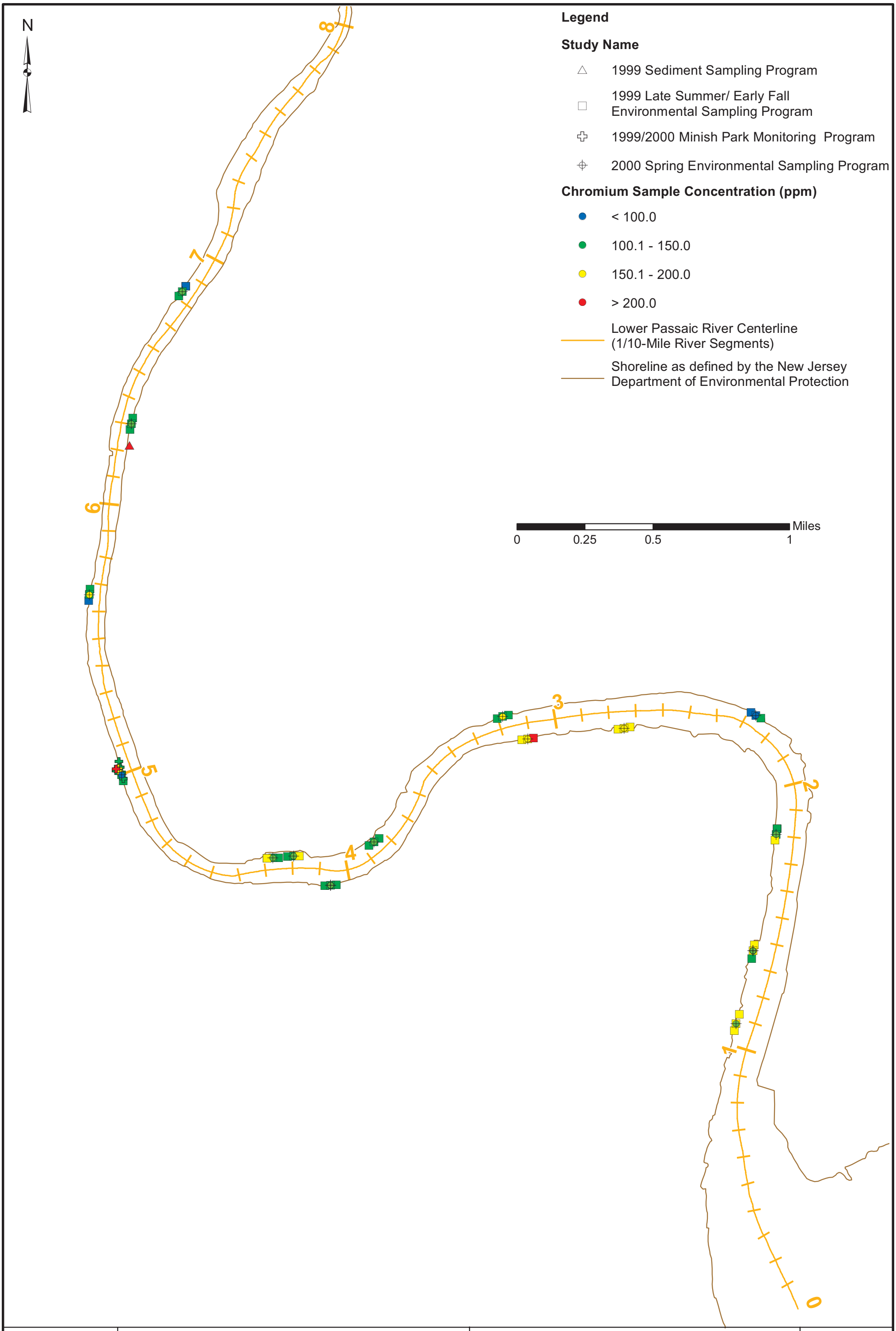
Cadmium Surface Sediment Samples from 1999 to 2000

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting. No nondetect values were reported.

Figure 14-2h

2009



US Army Corps of Engineers

Chromium Surface Sediment Samples from 1999 to 2000

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting. No nondetect values were reported.

Figure 14-2i

2009

N

Legend

Study Name

- 1999 Sediment Sampling Program
- 1999 Late Summer/ Early Fall Environmental Sampling Program
- 1999/2000 Minish Park Monitoring Program
- 2000 Spring Environmental Sampling Program

Copper Sample Concentration (ppm)

- < 100
- 101 - 400
- 201 - 300
- 301 - 400
- > 400
- Lower Passaic River Centerline (1/10-Mile River Segments)
- Shoreline as defined by the New Jersey Department of Environmental Protection

Miles
0 0.25 0.5 1

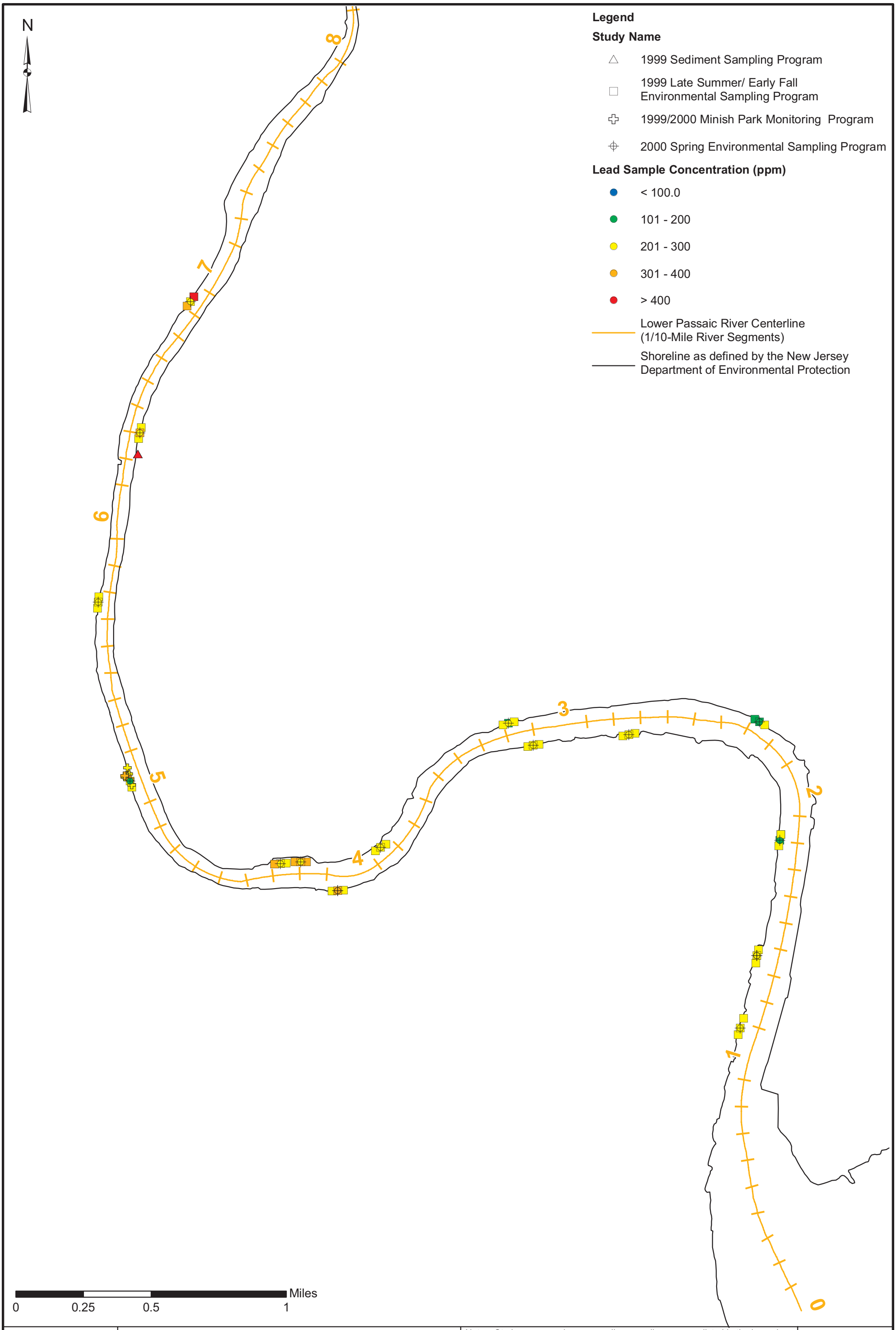
Copper Surface Sediment Samples from 1999 to 2000

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting. No nondetect values were reported.

Figure 14-2j

2009



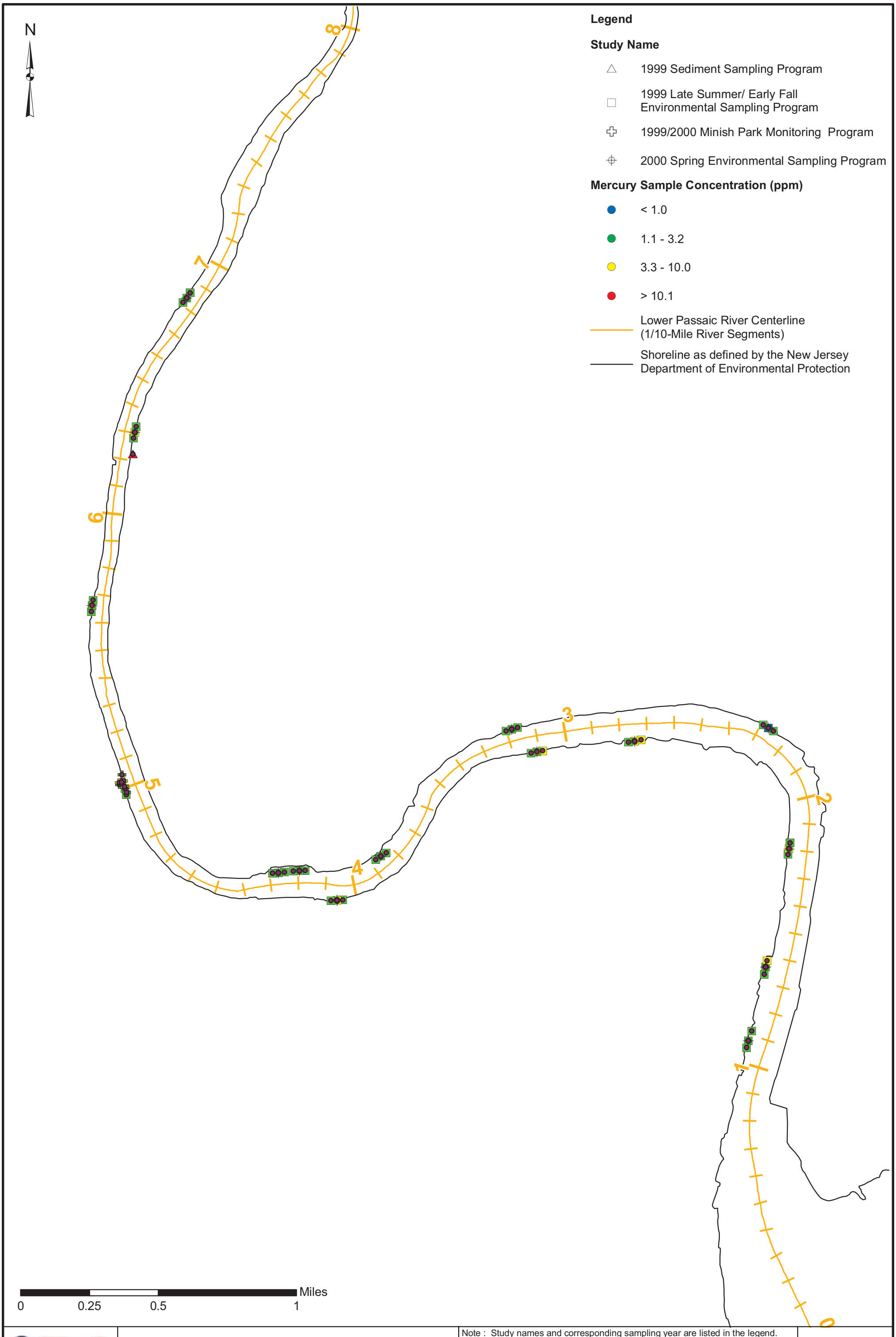
Lead Surface Sediment Samples from 1999 to 2000

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-2k

2009



Mercury Surface Sediment Samples from 1999 to 2000

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-2l

2009

N

8
7
6
5
4
3
2
1
0

Legend

Study Name

- 1999 Sediment Sampling Program
- 1999 Late Summer/ Early Fall Environmental Sampling Program
- 1999/2000 Minish Park Monitoring Program
- 2000 Spring Environmental Sampling Program

Total Bird TEQ (ppb)

- < 0.20
- 0.21 - 0.40
- 0.41 - 0.60
- 0.61 - 0.80
- 0.81 - 1.00
- > 1.00

Lower Passaic River Centerline (1/10-Mile River Segments)

Shoreline as defined by the New Jersey Department of Environmental Protection

0 0.25 0.5 1 Miles

US Army Corps of Engineers

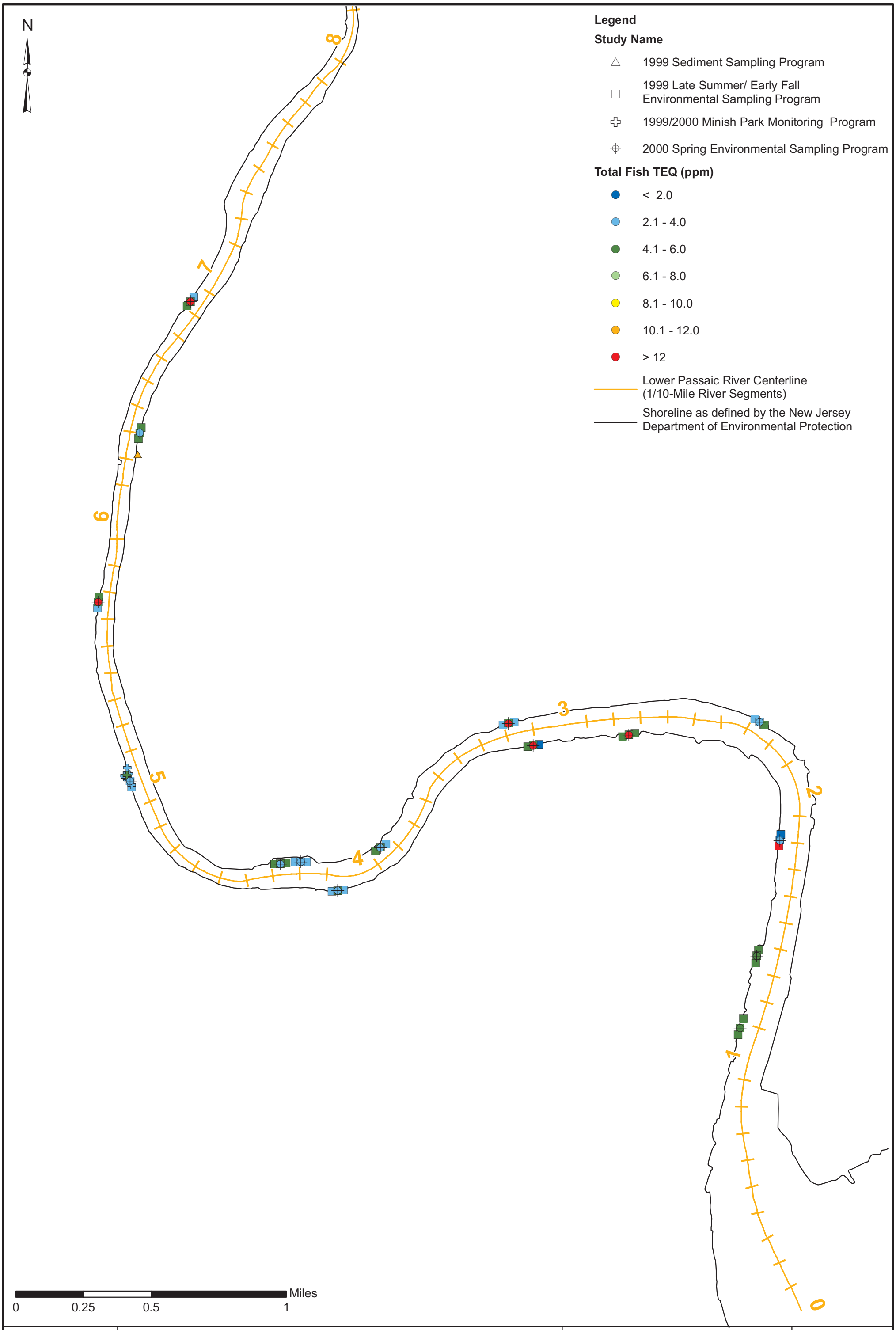
Total Bird Toxic Equivalency Quotient Sediment Samples from 1999 to 2000

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. If samples are plotted at the same location, samples from the latest sampling event were plotted on top.

Figure 14-2m

2009



Total Fish Toxic Equivalency Quotient Sediment Samples from 1999 to 2000

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. If samples are plotted at the same location, samples from the latest sampling event were plotted on top.

Figure 14-2n

2009

N

Legend

Study Name

- 1999 Sediment Sampling Program
- 1999 Late Summer/ Early Fall Environmental Sampling Program
- 1999/2000 Minish Park Monitoring Program
- 2000 Spring Environmental Sampling Program

Total Mammal TEQ (ppb)

- < 0.32
- 0.33 - 1.00
- 1.01 - 3.20
- > 3.2
- Lower Passaic River Centerline (1/10-Mile River Segments)
- Shoreline as defined by the New Jersey Department of Environmental Protection

8 7 6 5 4 3 2 1 0

Miles
0 0.25 0.5 1

US Army Corps of Engineers

Total Mammal Toxic Equivalency Quotient Sediment Samples from 1999 to 2000

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. If samples are plotted at the same location, samples from the latest sampling event were plotted on top.

Figure 14-2o

2009

N

17

16

15

14

13

12

Saddle River

Third River

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

2,3,7,8-TCDD Sample Concentration (ppt)

- < 10.0
- 10.1 - 32.0
- 32.1 - 100.0
- 100.1 - 320.0
- 320.1 - 1000.0
- 1000.1 - 3200.0
- 3200.1 - 10000.0
- > 10000

- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

Miles
0 0.25 0.5 1

US Army Corps of Engineers

2,3,7,8-TCDD Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3a1

2009

N

Third River

Second River

13

12

11

10

9

8

Rock and Coarse gravel

Gravel and Sand

Sand

Silt and Sand

Silt

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

2,3,7,8-TCDD Sample Concentration (ppt)

- < 10.0
- 10.1 - 32.0
- 32.1 - 100.0
- 100.1 - 320.0
- 320.1 - 1000.0
- 1000.1 - 3200.0
- 3200.1 - 10000.0
- > 10000

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

Miles

0 0.25 0.5 1

US Army Corps of Engineers

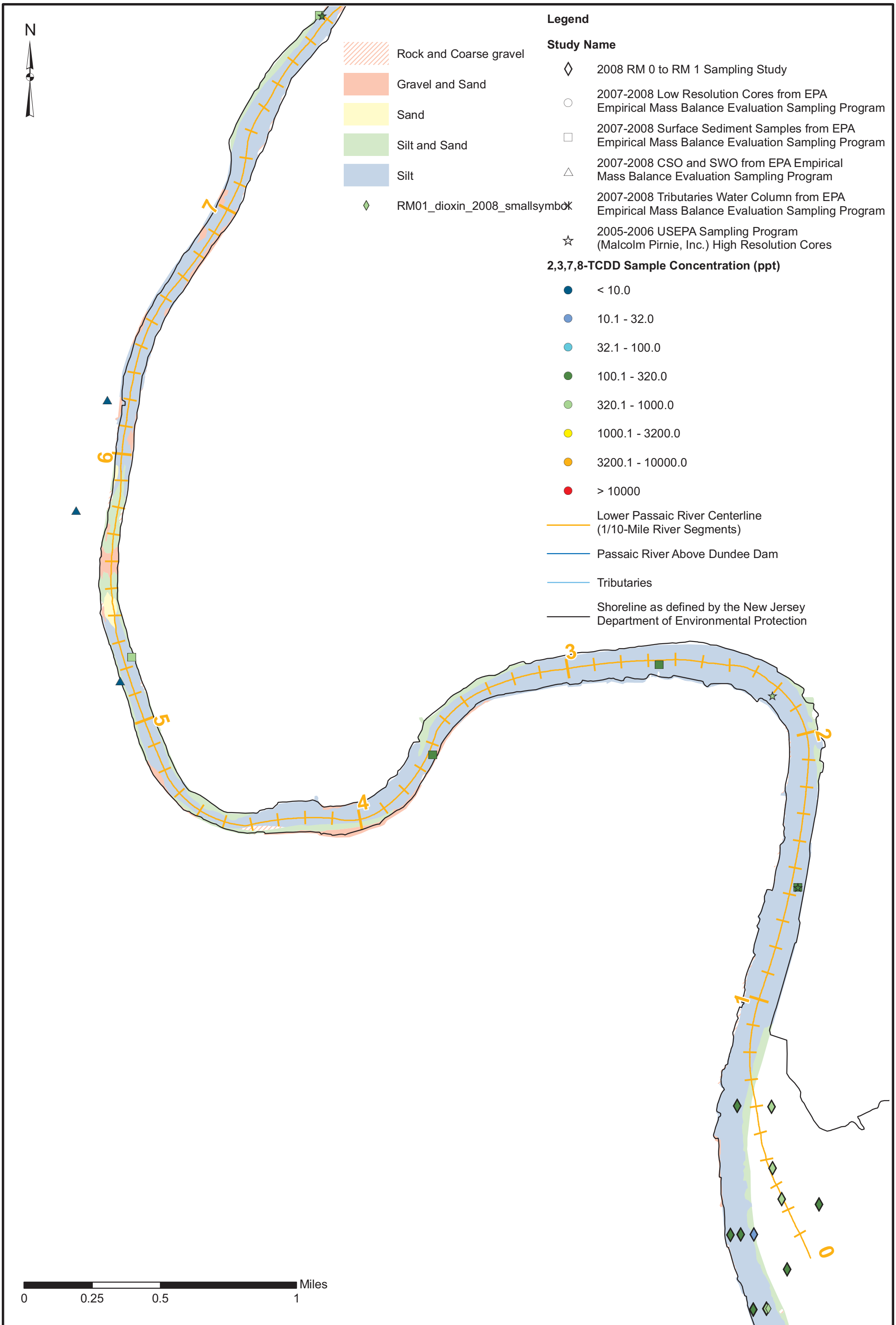
2,3,7,8-TCDD Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3a2

2009



2,3,7,8-TCDD Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3a3

2009

N

17

16

15

14

13

12

Saddle River

Third River

Rock and Coarse gravel

Gravel and Sand

Sand

Silt and Sand

Silt

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Total PCB Sample Concentration (ppb)

- < 100.0
- 100.1 - 320.0
- 320.1 - 1000.0
- > 1000.1

Lower Passaic River Centerline (1/10-Mile River Segments)

Passaic River Above Dundee Dam

Tributaries

Shoreline as defined by the New Jersey Department of Environmental Protection

Miles

0 0.25 0.5 1

US Army Corps of Engineers

Total PCB Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3b1

2009

N

Third River

Second River

13

12

11

10

9

8

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Total PCB Sample Concentration (ppb)

- < 100.0
- 100.1 - 320.0
- 320.1 - 1000.0
- > 1000.1

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

Miles
0 0.25 0.5 1

US Army Corps of Engineers

Total PCB Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3b2

2009

N

Rock and Coarse gravel

Gravel and Sand

Sand

Silt and Sand

Silt

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Total PCB Sample Concentration (ppb)

- < 100.0
- 100.1 - 320.0
- 320.1 - 1000.0
- > 1000.1

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

Miles

0 0.25 0.5 1

7 6 5 4 3 2 1 0

US Army Corps of Engineers

Total PCB Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3b3

2009

N

17

16

15

14

13

12

Saddle River

Third River

Rock and Coarse gravel

Gravel and Sand

Sand

Silt and Sand

Silt

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

LMW PAH Sample Concentration (ppm)

- < 3.2
- 3.2 - 10.0
- 10.1 - 32.0
- > 32.0

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

Miles

0 0.25 0.5 1

US Army Corps of Engineers

Total LMW PAH Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3c1

2009

N

Third River

Second River

13

12

11

10

9

8

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

LMW PAH Sample Concentration (ppm)

- < 3.2
- 3.2 - 10.0
- 10.1 - 32.0
- > 32.0

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

Miles
0 0.25 0.5 1

US Army Corps of Engineers

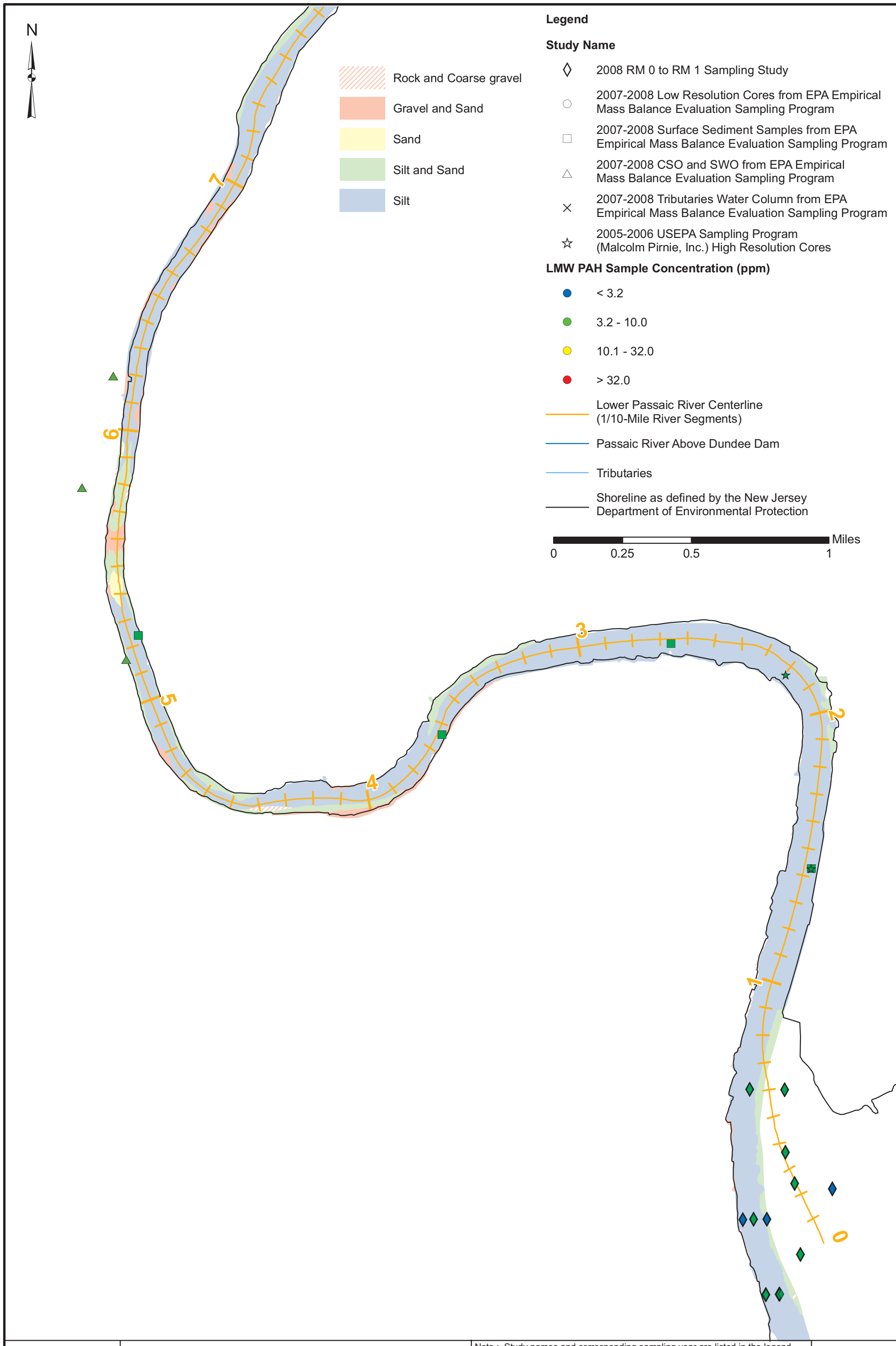
Total LMW PAH Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3c2

2009



Total LMW PAH Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3c3

2009

N

17

16

15

14

13

12

Saddle River

Third River

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

HMW PAH Sample Concentration (ppm)

- < 10.0
- 10.1 - 32.0
- 32.1 - 100.0
- 100.1 - 320.0
- > 320.0

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

Miles

0 0.25 0.5 1

US Army Corps of Engineers

Total HMW PAH Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3d1

2009

N

Third River

Second River

13

12

11

10

9

8

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

HMW PAH Sample Concentration (ppm)

- < 10.0
- 10.1 - 32.0
- 32.1 - 100.0
- 100.1 - 320.0
- > 320.0

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

0 0.25 0.5 1 Miles

US Army Corps of Engineers

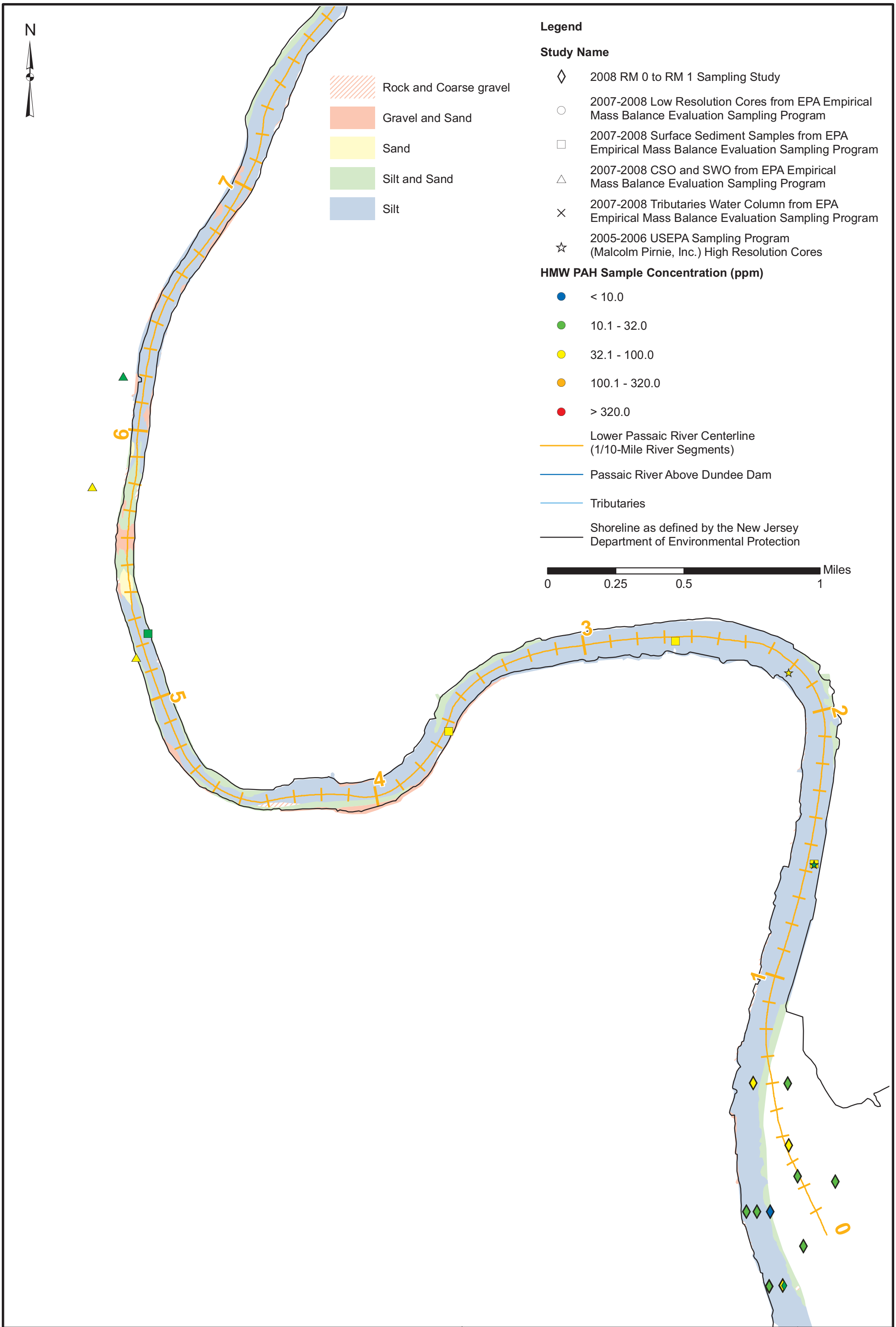
Total HMW PAH Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3d2

2009



Total HMW PAH Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3d3

2009

N

17

16

15

14

13

12

Saddle River

Third River

Rock and Coarse gravel

Gravel and Sand

Sand

Silt and Sand

Silt

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

4,4'-DDX Sample Concentration (ppb)

- < 100.0
- 100.1 - 320.0
- 320.1 - 1000.0
- > 1000

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

Miles

0 0.2 0.4 0.8

US Army Corps of Engineers

Total 4,4'-DDX Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3e1

2009

N

Third River

Second River

13

12

11

10

9

8

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

4,4'-DDX Sample Concentration (ppb)

- < 100.0
- 100.1 - 320.0
- 320.1 - 1000.0
- > 1000

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

Miles
0 0.2 0.4 0.8

US Army Corps of Engineers

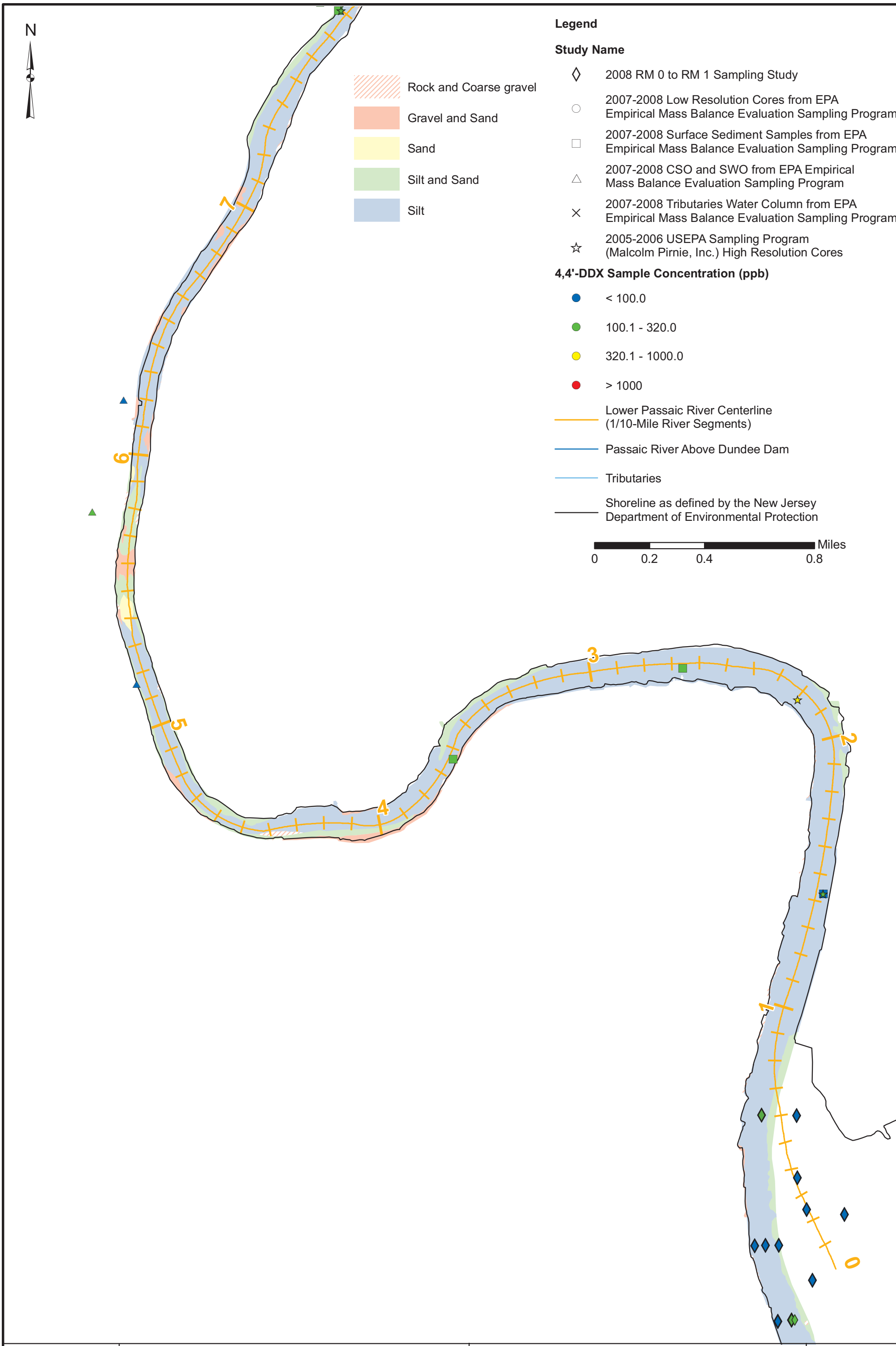
Total 4,4'-DDX Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3e2

2009



Total 4,4'-DDX Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3e3

2009

N

17

16

15

14

13

12

Saddle River

Third River

Rock and Coarse gravel

Gravel and Sand

Sand

Silt and Sand

Silt

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Total Chlordane Sample Concentration (ppb)

- < 100.0
- 100.1 - 320.0
- > 320.0

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

Miles

0 0.25 0.5 1

US Army Corps of Engineers

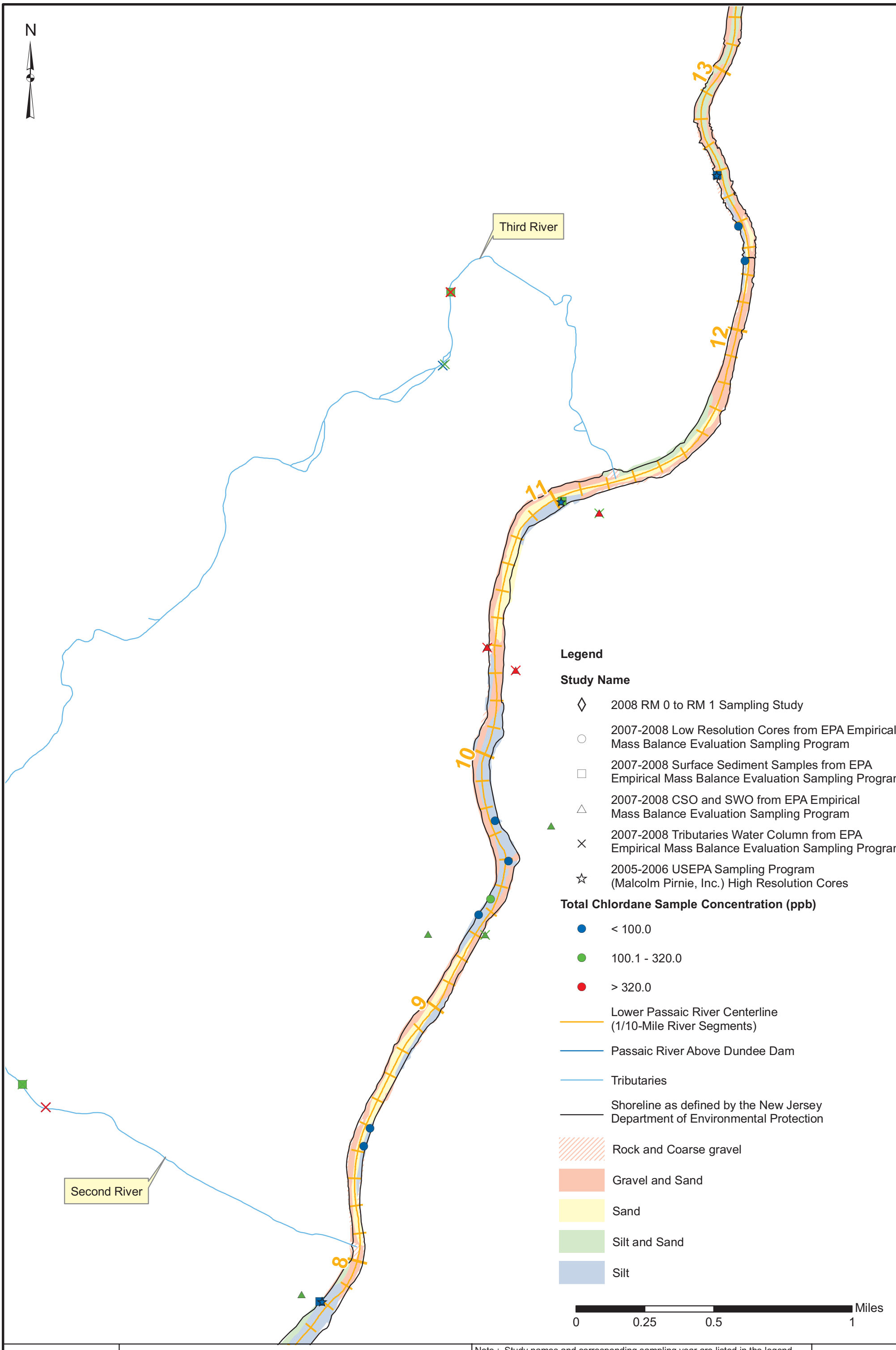
Total Chlordane Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3f1

2009



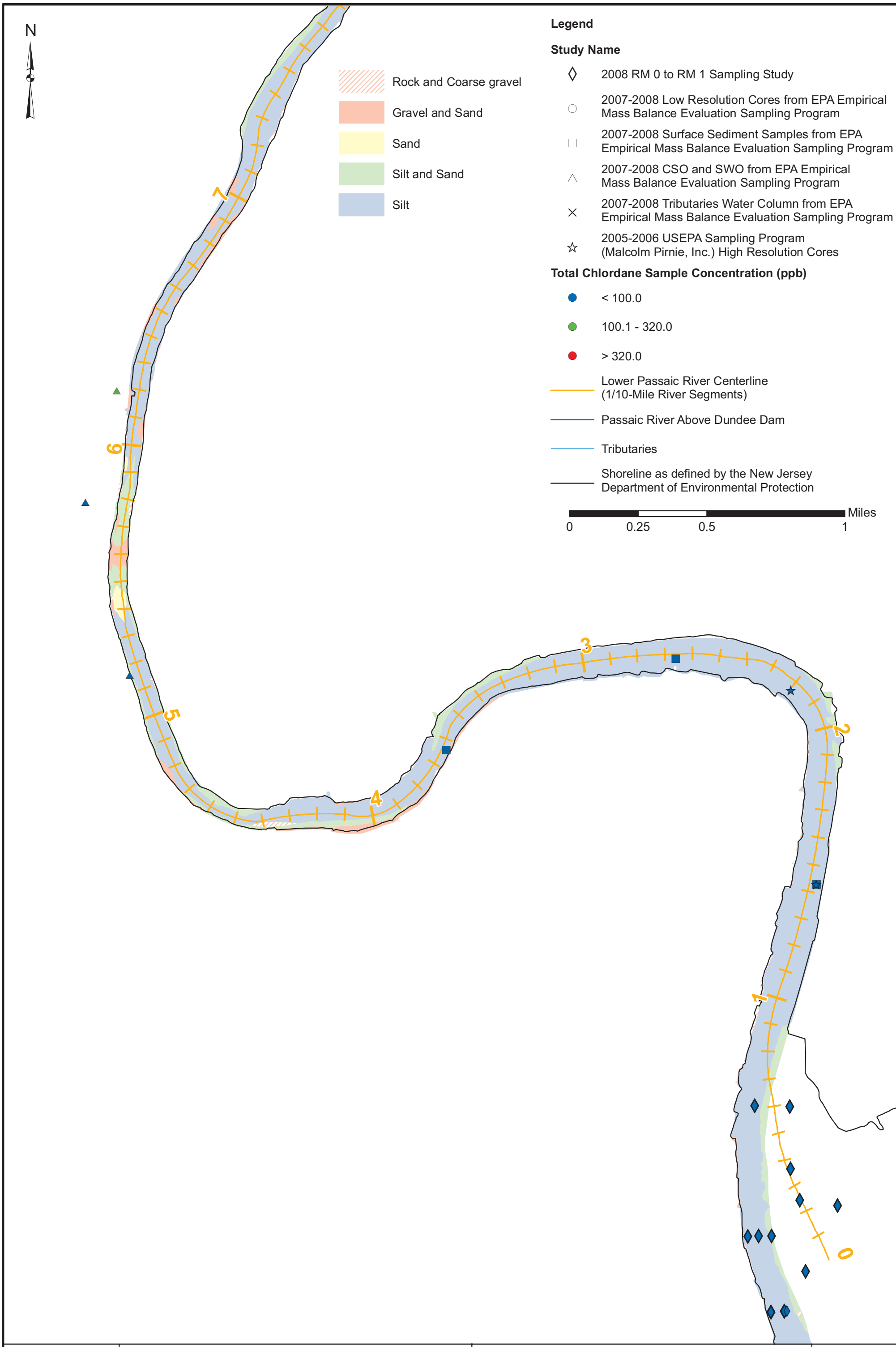
Total Chlordane Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3f2

2009



Total Chlordane Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3f3

2009

N

17

16

15

14

13

12

Saddle River

Third River

Rock and Coarse gravel

Gravel and Sand

Sand

Silt and Sand

Silt

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Dieldrin Sample Concentrations (ppb)

- < 10.0
- 10.1 - 32.0
- 32.1 - 100.0
- > 100.0

Lower Passaic River Centerline (1/10-Mile River Segments)

Passaic River Above Dundee Dam

Tributaries

Shoreline as defined by the New Jersey Department of Environmental Protection

Miles

0 0.25 0.5 1

US Army Corps of Engineers

Dieldrin Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3g1

2009

N

Third River

Second River

13

12

11

10

9

8

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Dieldrin Sample Concentrations (ppb)

- < 10.0
- 10.1 - 32.0
- 32.1 - 100.0
- > 100.0

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

0 0.25 0.5 1 Miles

US Army Corps of Engineers

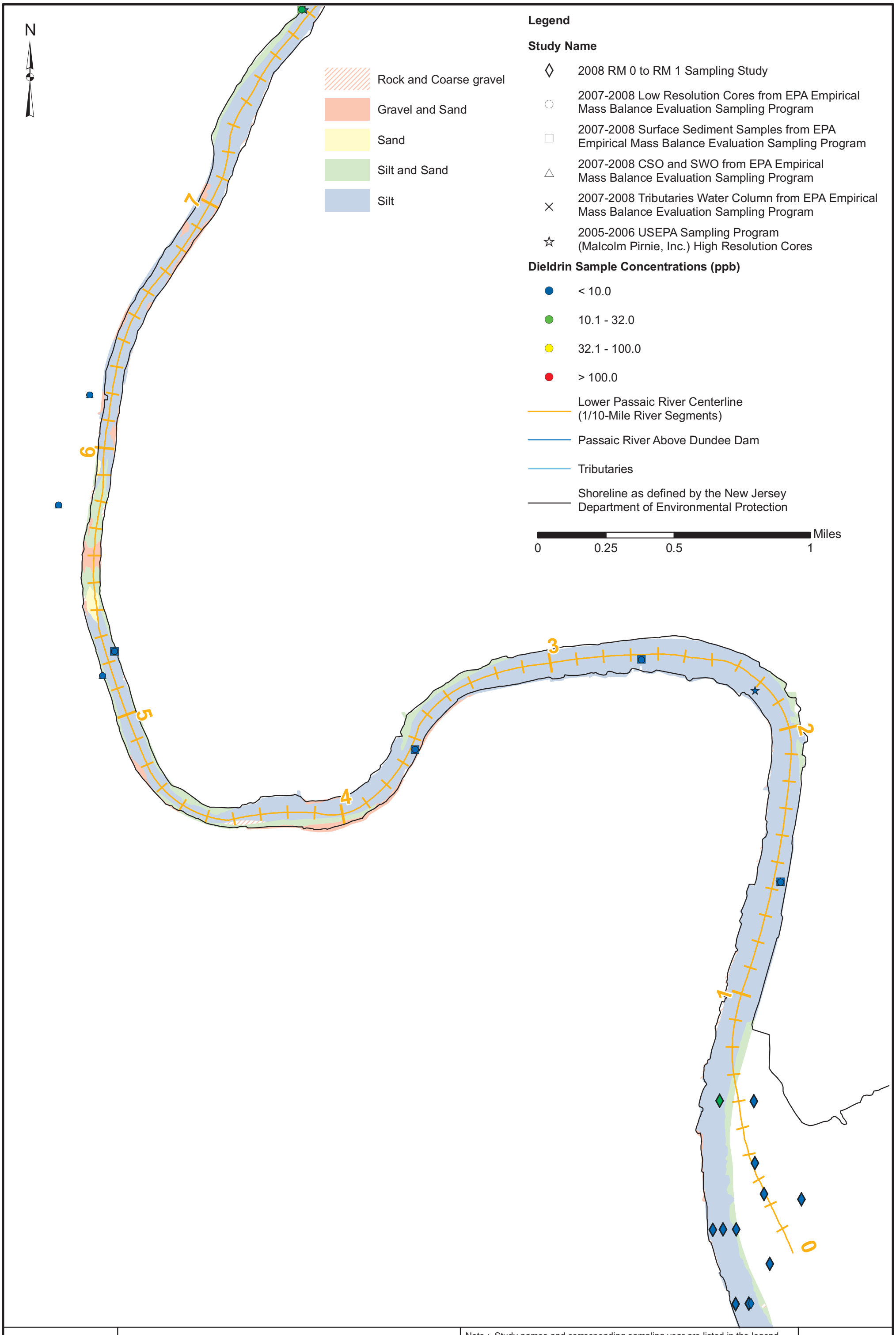
Dieldrin Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3g2

2009



Dieldrin Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3g3

2009

N

17

16

15

14

13

12

Saddle River

Third River

Rock and Coarse gravel

Gravel and Sand

Sand

Silt and Sand

Silt

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Cadmium Sample Concentration (ppb)

- < 320.0
- 320.1 - 1000.0
- 1000.1 - 3200.0
- 3200.1 - 10000.0
- > 10,000

Lower Passaic River Centerline (1/10-Mile River Segments)

Passaic River Above Dundee Dam

Tributaries

Shoreline as defined by the New Jersey Department of Environmental Protection

Miles

0 0.25 0.5 1

US Army Corps of Engineers

Cadmium Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3h1

2009

N

Third River

Second River

12

11

10

9

8

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Cadmium Sample Concentration (ppb)

- < 320.0
- 320.1 - 1000.0
- 1000.1 - 3200.0
- 3200.1 - 10000.0
- > 10,000
- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection
- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

Miles

0 0.25 0.5 1

US Army Corps of Engineers

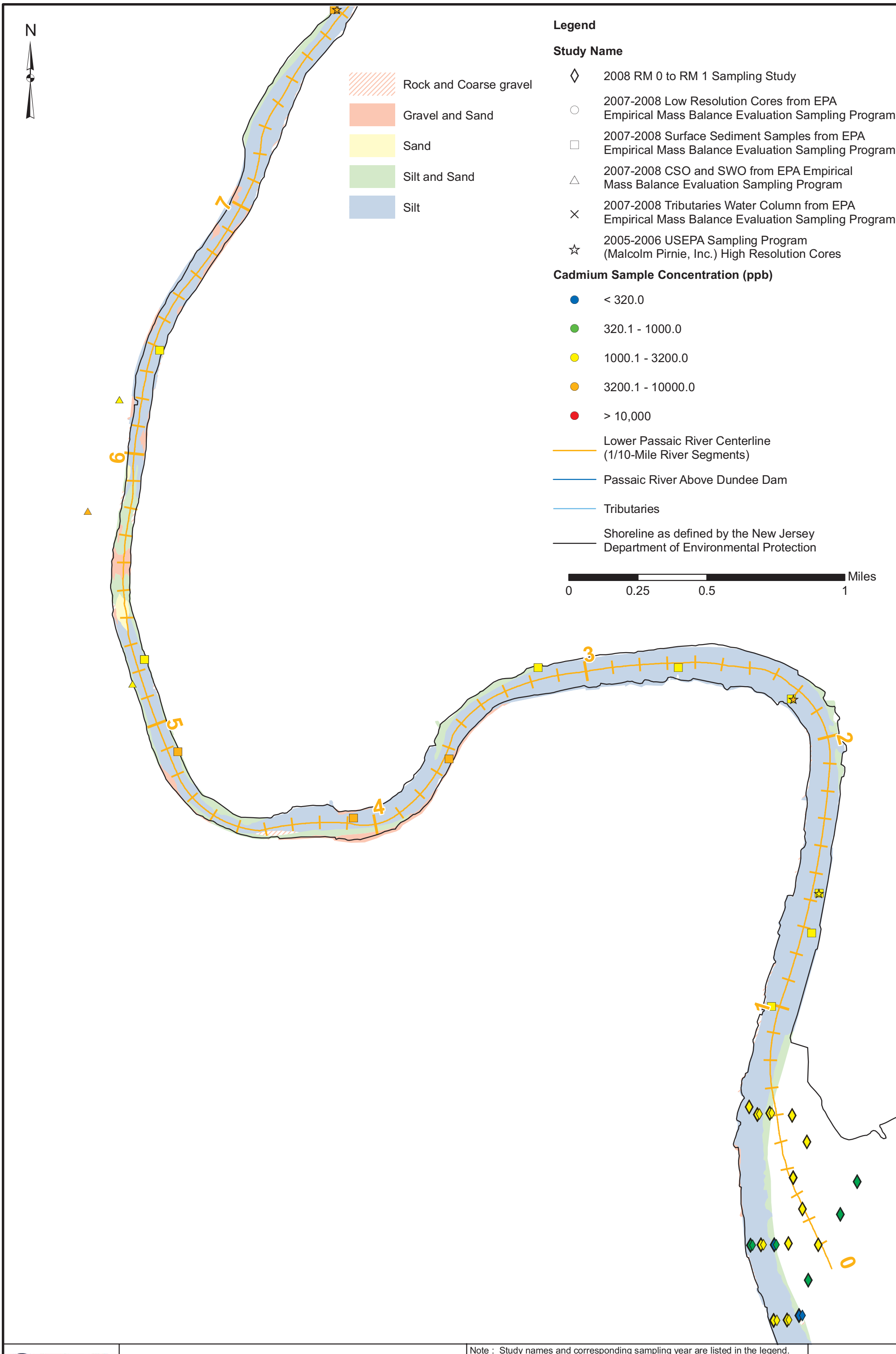
Cadmium Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3h2

2009



Cadmium Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3h3

2009

N

17

16

15

14

13

12

Saddle River

Third River

Rock and Coarse gravel

Gravel and Sand

Sand

Silt and Sand

Silt

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Chromium Sample Concentration (ppm)

- < 32.00
- 32.01 - 100.00
- 100.01 - 320.00
- 320.01 - 1000.00
- > 1000

Lower Passaic River Centerline (1/10-Mile River Segments)

Passaic River Above Dundee Dam

Tributaries

Shoreline as defined by the New Jersey Department of Environmental Protection

Miles

0 0.25 0.5 1

US Army Corps of Engineers

Chromium Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3i1

2009

N

Third River

Second River

13

12

11

10

9

8

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Chromium Sample Concentration (ppm)

- < 32.00
- 32.01 - 100.00
- 100.01 - 320.00
- 320.01 - 1000.00
- > 1000

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection
- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

Miles
0 0.25 0.5 1

US Army Corps of Engineers

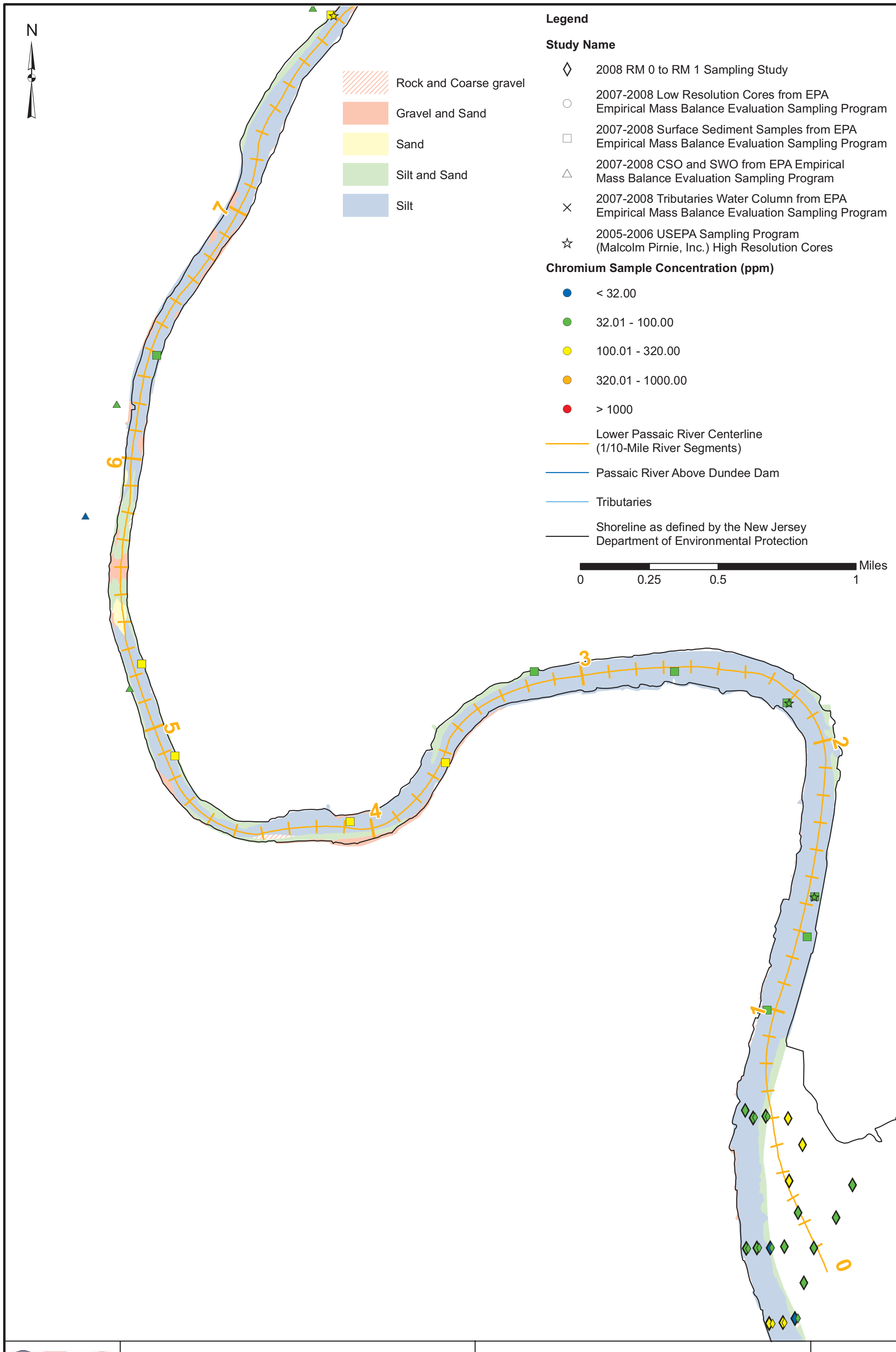
Chromium Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3i2

2009



Chromium Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3i3

2009

N

17

16

15

14

13

12

Saddle River

Third River

Rock and Coarse gravel

Gravel and Sand

Sand

Silt and Sand

Silt

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Copper Sample Concentration (ppm)

- < 32.00
- 32.01 - 100.00
- 100.01 - 320.00
- > 320.00

Lower Passaic River Centerline (1/10-Mile River Segments)

Passaic River Above Dundee Dam

Tributaries

Shoreline as defined by the New Jersey Department of Environmental Protection

Miles

0 0.25 0.5 1

US Army Corps of Engineers

Copper Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3j1

2009

N

Third River

Second River

13

12

11

10

9

8

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Copper Sample Concentration (ppm)

- < 32.00
- 32.01 - 100.00
- 100.01 - 320.00
- > 320.00
- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection
- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

0 0.25 0.5 1 Miles

US Army Corps of Engineers

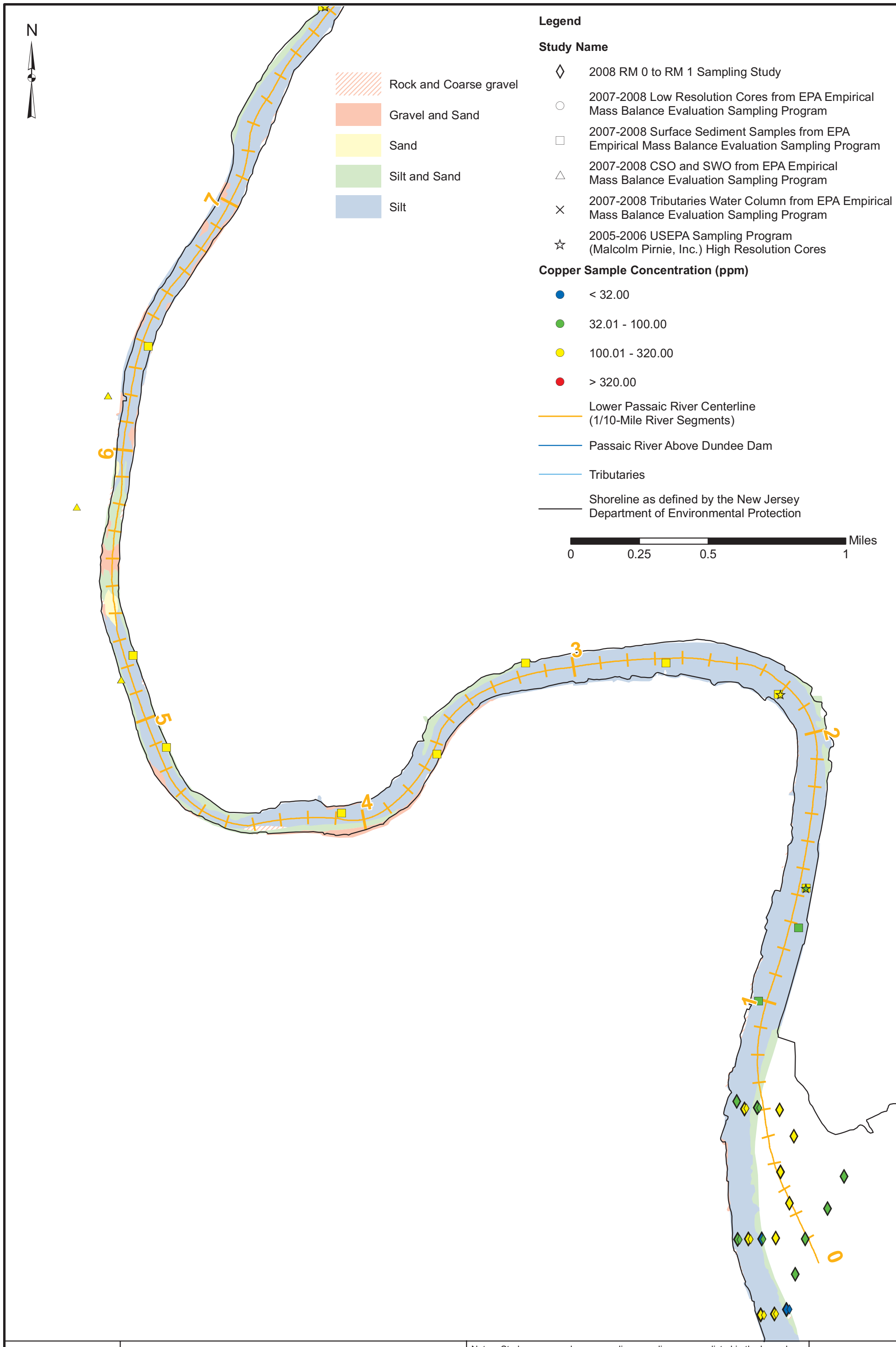
Copper Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3j2

2009



Copper Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3j3

2009

N

17

16

15

14

13

12

Saddle River

Third River

Rock and Coarse gravel

Gravel and Sand

Sand

Silt and Sand

Silt

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Lead Sample Concentration (ppm)

- < 100.0
- 100.1 - 320.0
- > 320.0

Lower Passaic River Centerline (1/10-Mile River Segments)

Passaic River Above Dundee Dam

Tributaries

Shoreline as defined by the New Jersey Department of Environmental Protection

Miles

0 0.25 0.5 1

US Army Corps of Engineers

Lead Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3k1

2009

N

Third River

Second River

13

12

11

10

9

8

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Lead Sample Concentration (ppm)

- < 100.0
- 100.1 - 320.0
- > 320.0

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

Miles
0 0.25 0.5 1

US Army Corps of Engineers

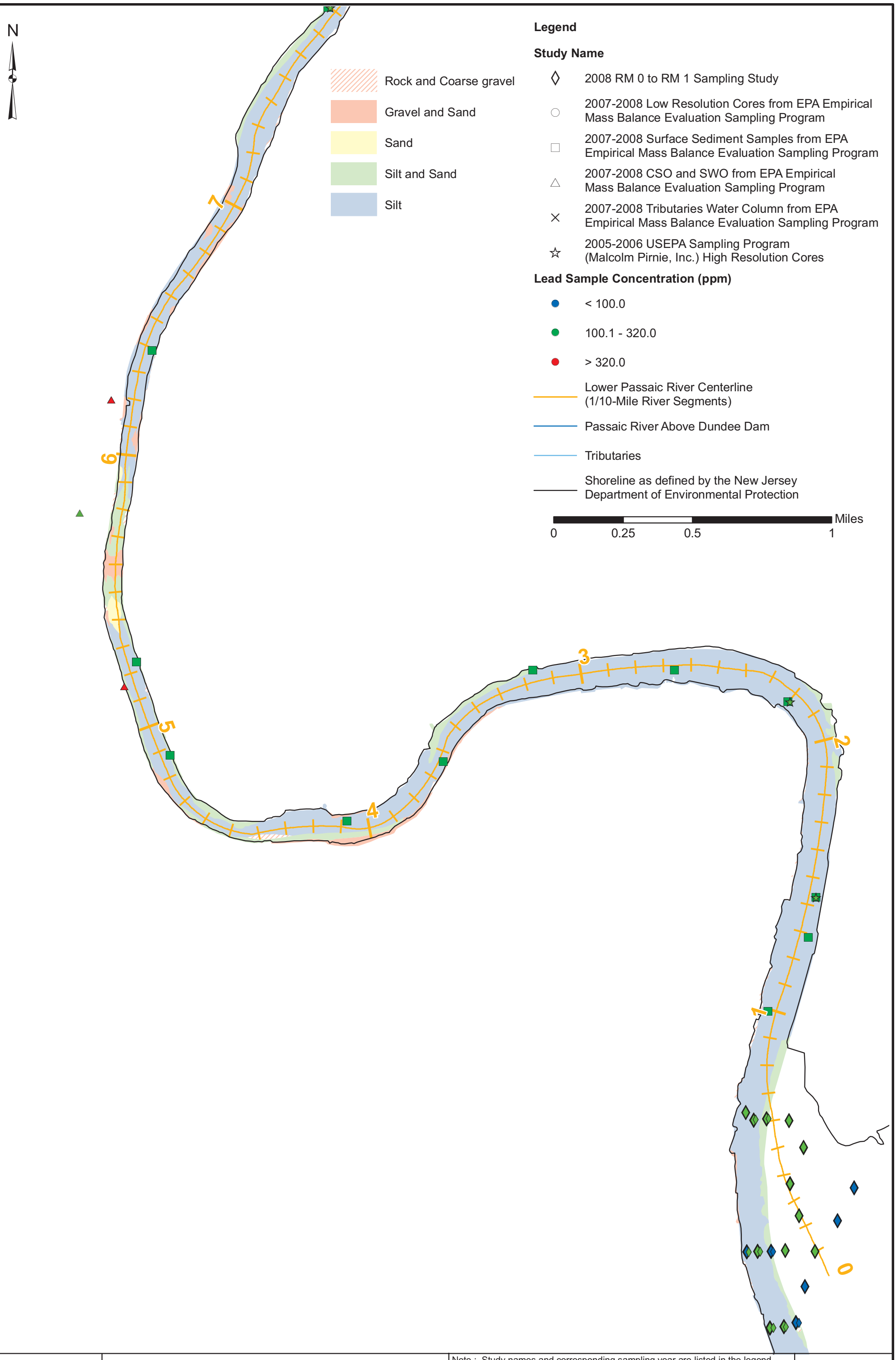
Lead Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3k2

2009



Lead Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3k3

2009

N

17

16

15

14

13

12

Saddle River

Third River

Rock and Coarse gravel

Gravel and Sand

Sand

Silt and Sand

Silt

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Mercury Sample Concentration (ppm)

- < 1.00
- 1.01 - 3.20
- 3.21 - 10.00
- > 10.00

Lower Passaic River Centerline (1/10-Mile River Segments)

Passaic River Above Dundee Dam

Tributaries

Shoreline as defined by the New Jersey Department of Environmental Protection

Miles

0 0.25 0.5 1

US Army Corps of Engineers

Mercury Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3l1

2009

N

Third River

Second River

13

12

11

10

9

8

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Low Resolution Cores from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 CSO and SWO from EPA Empirical Mass Balance Evaluation Sampling Program
- 2007-2008 Tributaries Water Column from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Mercury Sample Concentration (ppm)

- < 1.00
- 1.01 - 3.20
- 3.21 - 10.00
- > 10.00

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

Miles

0 0.25 0.5 1

US Army Corps of Engineers

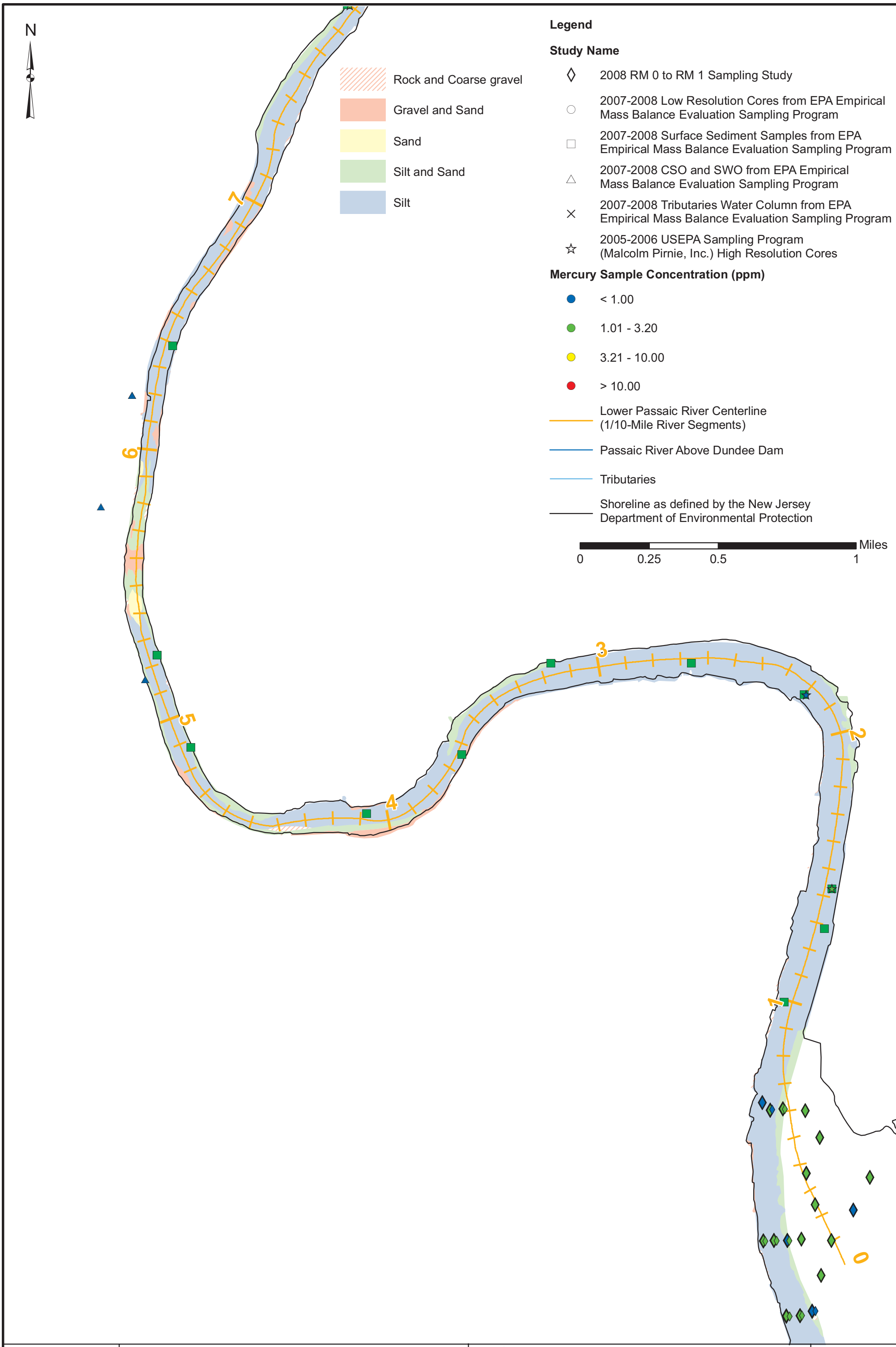
Mercury Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3l2

2009



Mercury Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core. Because each study provided a different definition for "surface sediments," the samples plotted on this figure generally represent sediments from a depth of 0 foot to less than 1 foot. If samples are plotted at the same location, samples from the latest sampling event were plotted on top. Duplicate samples were averaged before plotting.

Figure 14-3l3

2009

N

17

16

15

14

13

12

Saddle River

Third River

Legend

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Total Bird TEQ (ppb)

- < 0.032
- 0.032 - 0.100
- 0.100 - 0.320
- 0.320 - 1.000
- > 1.00

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection
- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

Miles
0 0.25 0.5 1

US Army Corps of Engineers

Total Bird TEQ Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core.If samples are plotted at the same location, samples from the latest sampling event were plotted on top.

Figure 14-3m1

2009

N

Third River

Second River

12

11

10

9

8

Legend

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Total Bird TEQ (ppb)

- < 0.032
- 0.032 - 0.100
- 0.100 - 0.320
- 0.320 - 1.000
- > 1.00

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

0 0.25 0.5 1 Miles

US Army Corps of Engineers

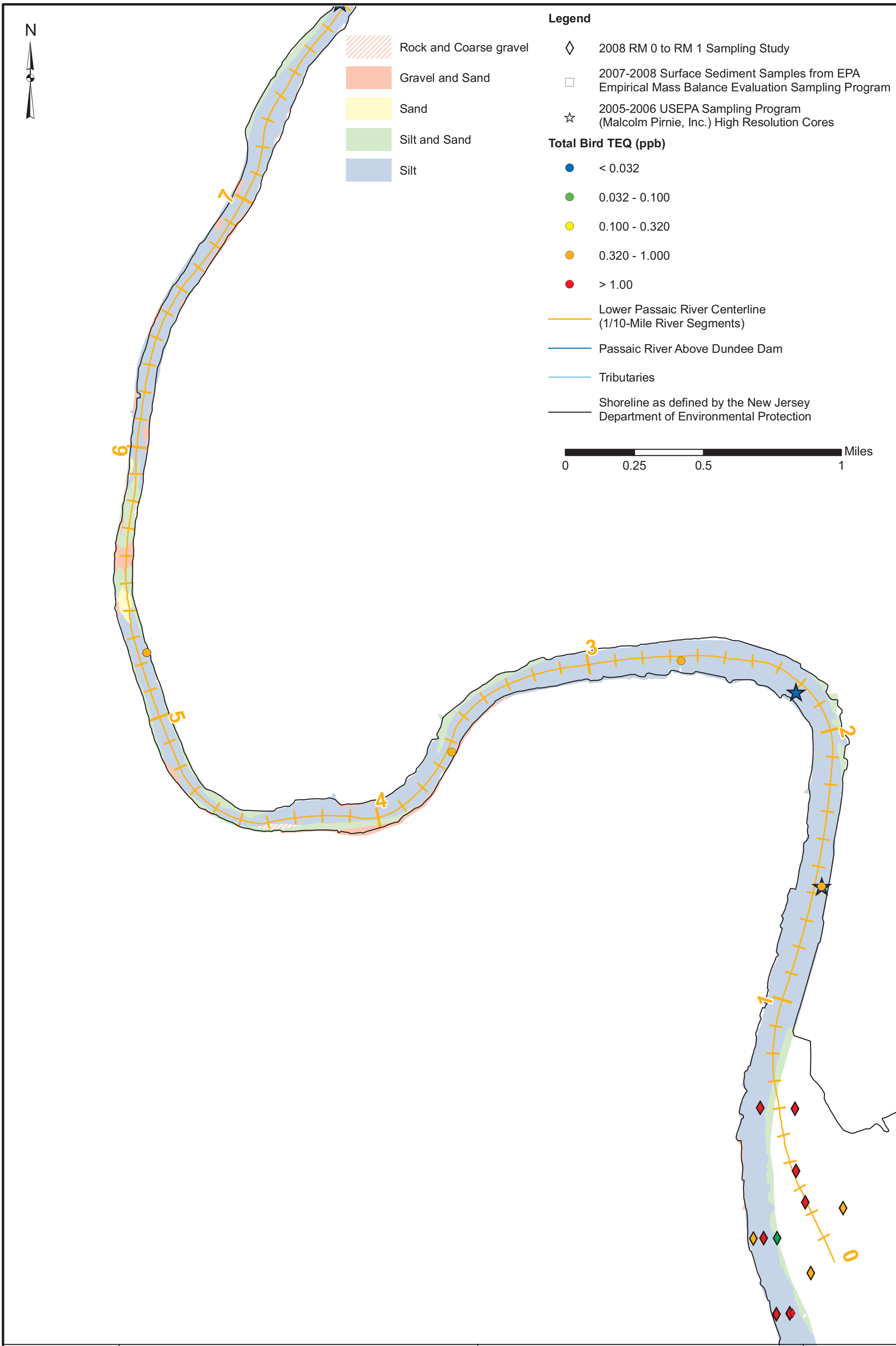
Total Bird TEQ Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core.If samples are plotted at the same location, samples from the latest sampling event were plotted on top.

Figure 14-3m2

2009



Total Bird TEQ Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core.If samples are plotted at the same location, samples from the latest sampling event were plotted on top.

Figure 14-3m3

2009

N

17

16

15

14

13

12

Saddle River

Third River

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Total Fish TEQ (ppb)

- < 0.010
- 0.011 - 0.032
- 0.033 - 0.100
- 0.101 - 0.320
- > 0.32

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection
- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

Miles
0 0.25 0.5 1

US Army Corps of Engineers

Total Fish TEQ Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core.If samples are plotted at the same location, samples from the latest sampling event were plotted on top.

Figure 14-3n1

2009

N

Third River

Second River

13

12

11

10

9

8

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Total Fish TEQ (ppb)

- < 0.010
- 0.011 - 0.032
- 0.033 - 0.100
- 0.101 - 0.320
- > 0.32

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

0 0.25 0.5 1 Miles

US Army Corps of Engineers

Total Fish TEQ Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core.If samples are plotted at the same location, samples from the latest sampling event were plotted on top.

Figure 14-3n2

2009

N

Rock and Coarse gravel
Gravel and Sand
Sand
Silt and Sand
Silt

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Total Fish TEQ (ppb)

- < 0.010
- 0.011 - 0.032
- 0.033 - 0.100
- 0.101 - 0.320
- > 0.32

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

Miles
0 0.25 0.5 1

7 6 5 4 3 2 1 0

US Army Corps of Engineers

Total Fish TEQ Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core.If samples are plotted at the same location, samples from the latest sampling event were plotted on top.

Figure 14-3n3

2009

N

17

16

15

14

13

12

Saddle River

Third River

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Total Mammal TEQ (ppb)

- < 0.032
- 0.033 - 0.100
- 0.101 - 0.320
- > 0.32

- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection

- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

0 0.25 0.5 1 Miles

US Army Corps of Engineers

Total Mammal TEQ Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core.If samples are plotted at the same location, samples from the latest sampling event were plotted on top.

Figure 14-3o1

2009

N

Third River

Second River

12

11

10

9

8

7

Legend

Study Name

- 2008 RM 0 to RM 1 Sampling Study
- 2007-2008 Surface Sediment Samples from EPA Empirical Mass Balance Evaluation Sampling Program
- 2005-2006 USEPA Sampling Program (Malcolm Pirnie, Inc.) High Resolution Cores

Total Mammal TEQ (ppb)

- < 0.032
- 0.033 - 0.100
- 0.101 - 0.320
- > 0.32
- Lower Passaic River Centerline (1/10-Mile River Segments)
- Passaic River Above Dundee Dam
- Tributaries
- Shoreline as defined by the New Jersey Department of Environmental Protection
- Rock and Coarse gravel
- Gravel and Sand
- Sand
- Silt and Sand
- Silt

0 0.25 0.5 1 Miles

US Army Corps of Engineers

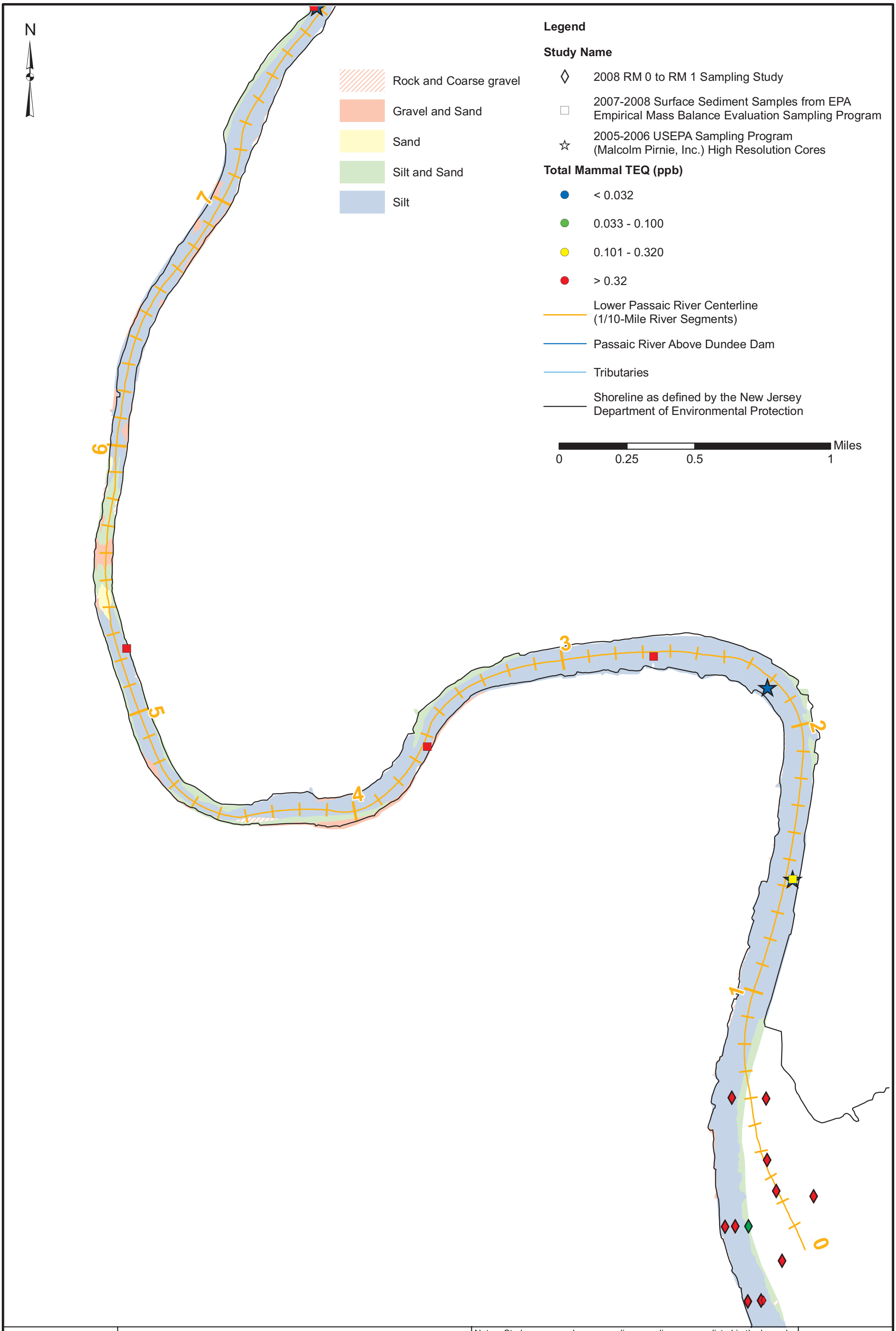
Total Mammal TEQ Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core.If samples are plotted at the same location, samples from the latest sampling event were plotted on top.

Figure 14-3o2

2009



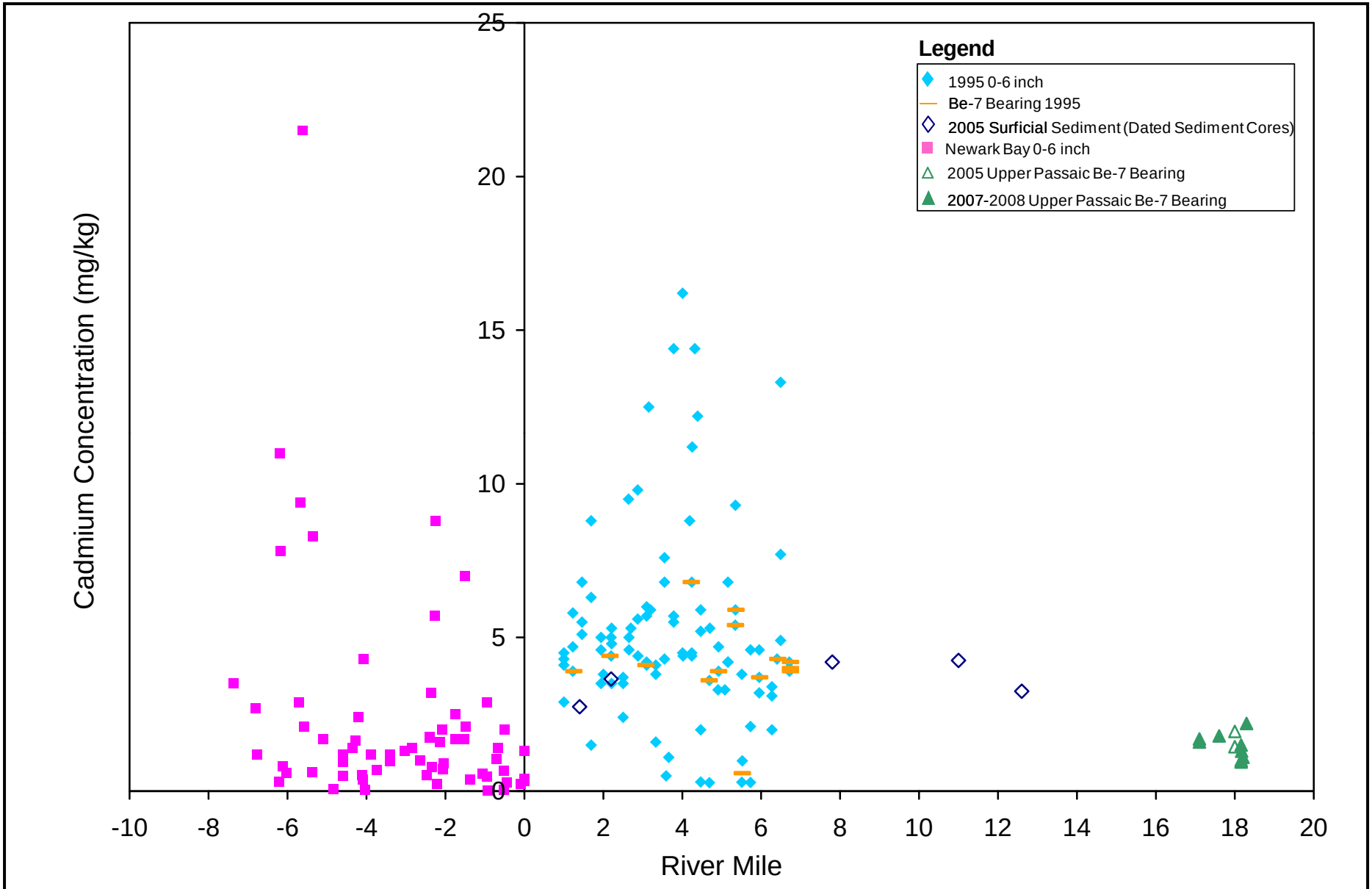
Total Mammal TEQ Surface Sediment Samples from 2005 to 2008

Lower Passaic River Restoration Project

Note : Study names and corresponding sampling year are listed in the legend. Samples represent either sediment grab samples or the top segment of a sediment core.If samples are plotted at the same location, samples from the latest sampling event were plotted on top.

Figure 14-3o3

2009

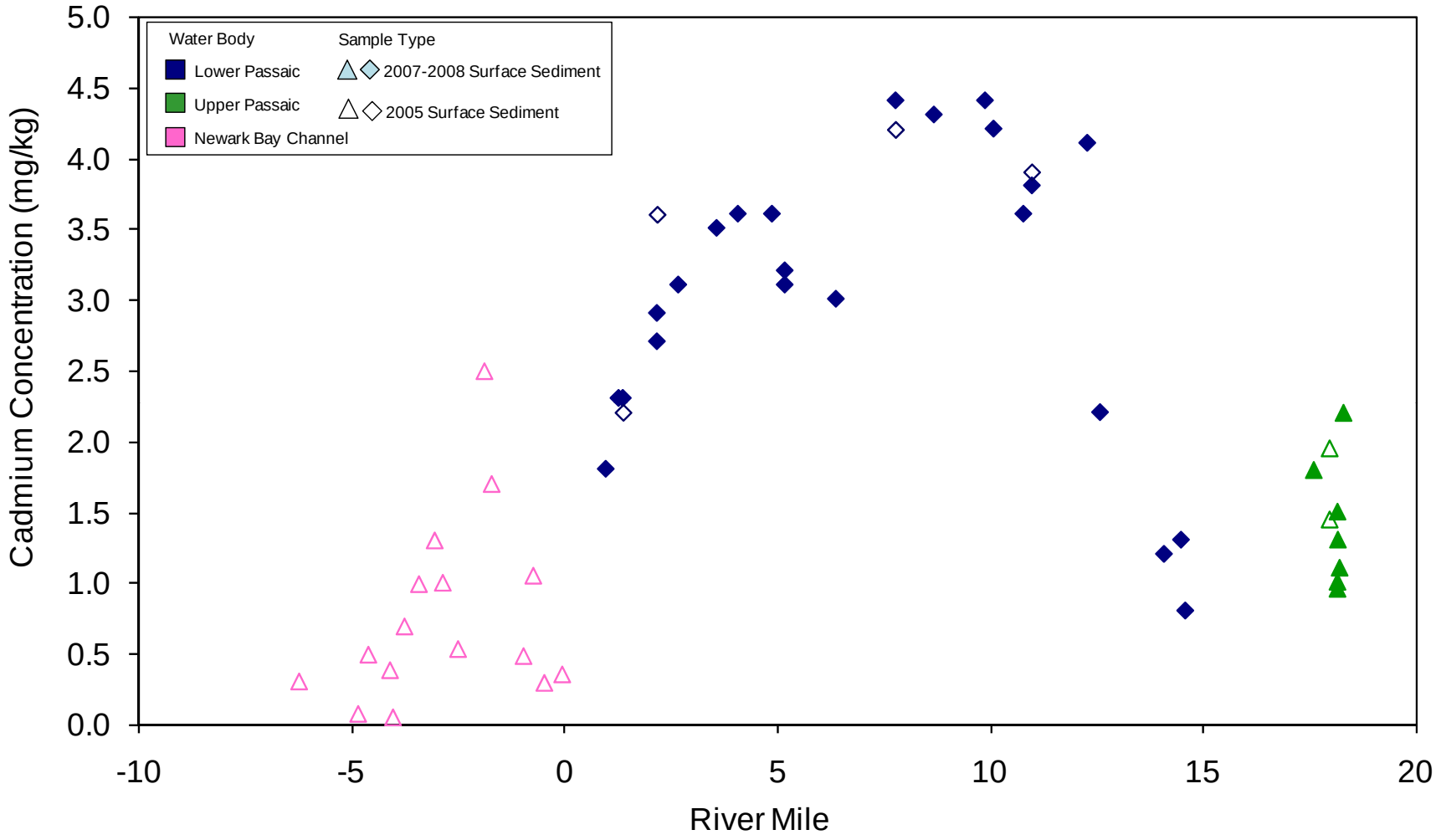


Cadmium versus River Mile
1995 & 2005 TSI and 2005-2008 USEPA Data

Lower Passaic River Restoration Project

Figure 14-4a

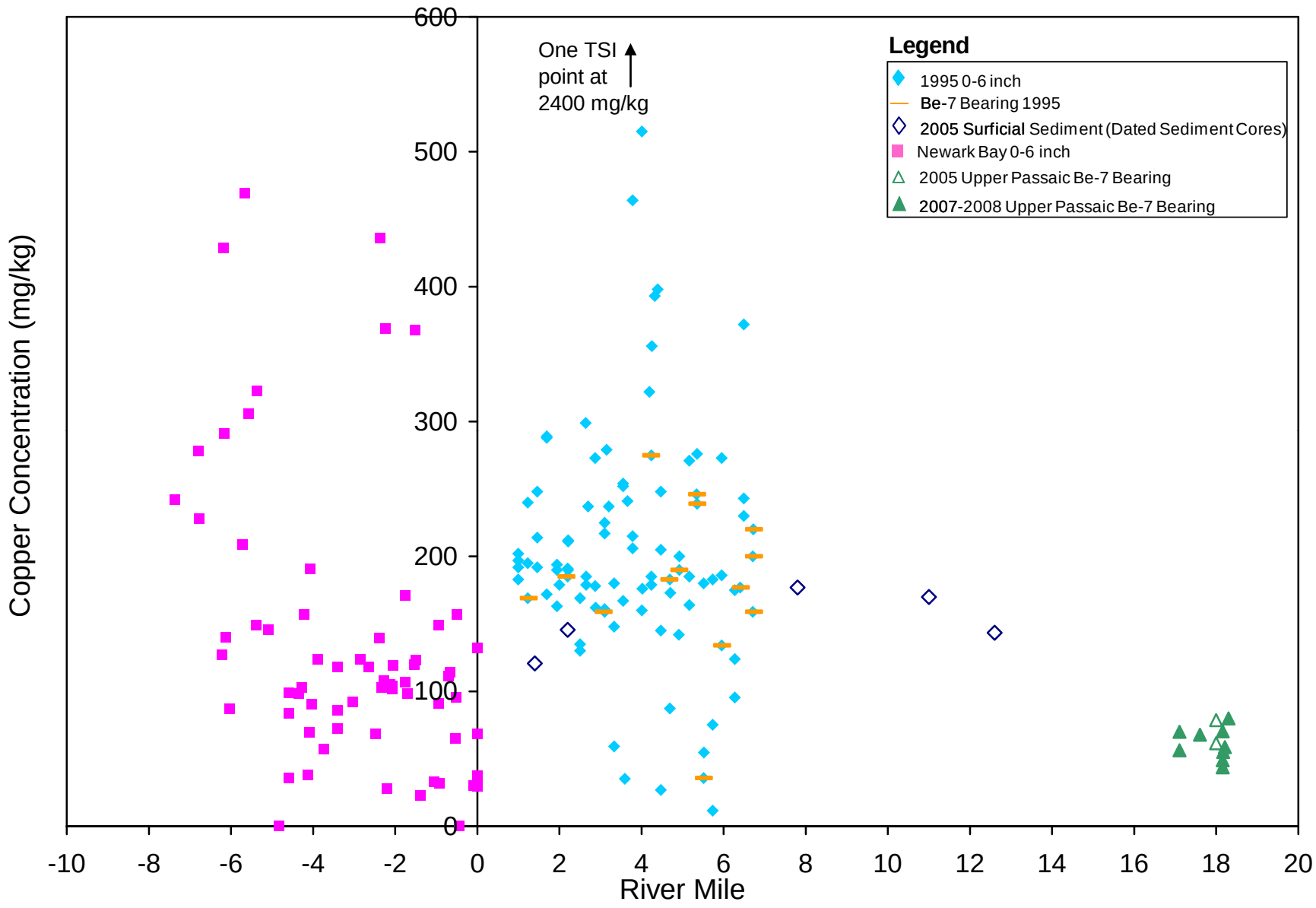
2009



Cadmium versus River Mile
Be-7 Bearing Samples
Lower Passaic – Newark Bay – Upper Passaic
Lower Passaic River Restoration Project

Figure 14-4b

2009

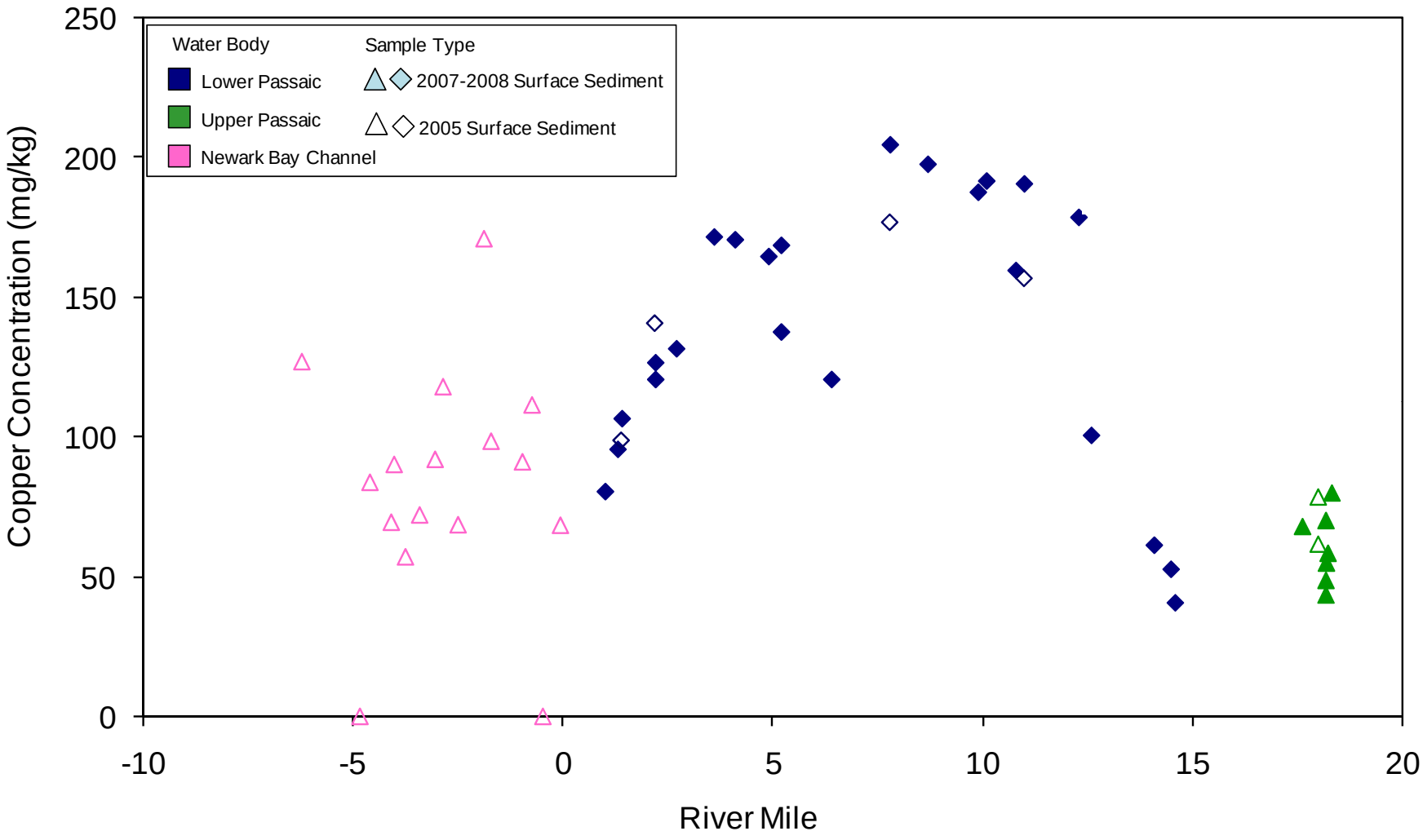


Copper versus River Mile
1995 & 2005 TSI and 2005-2008 USEPA Data

Lower Passaic River Restoration Project

Figure 14-4c

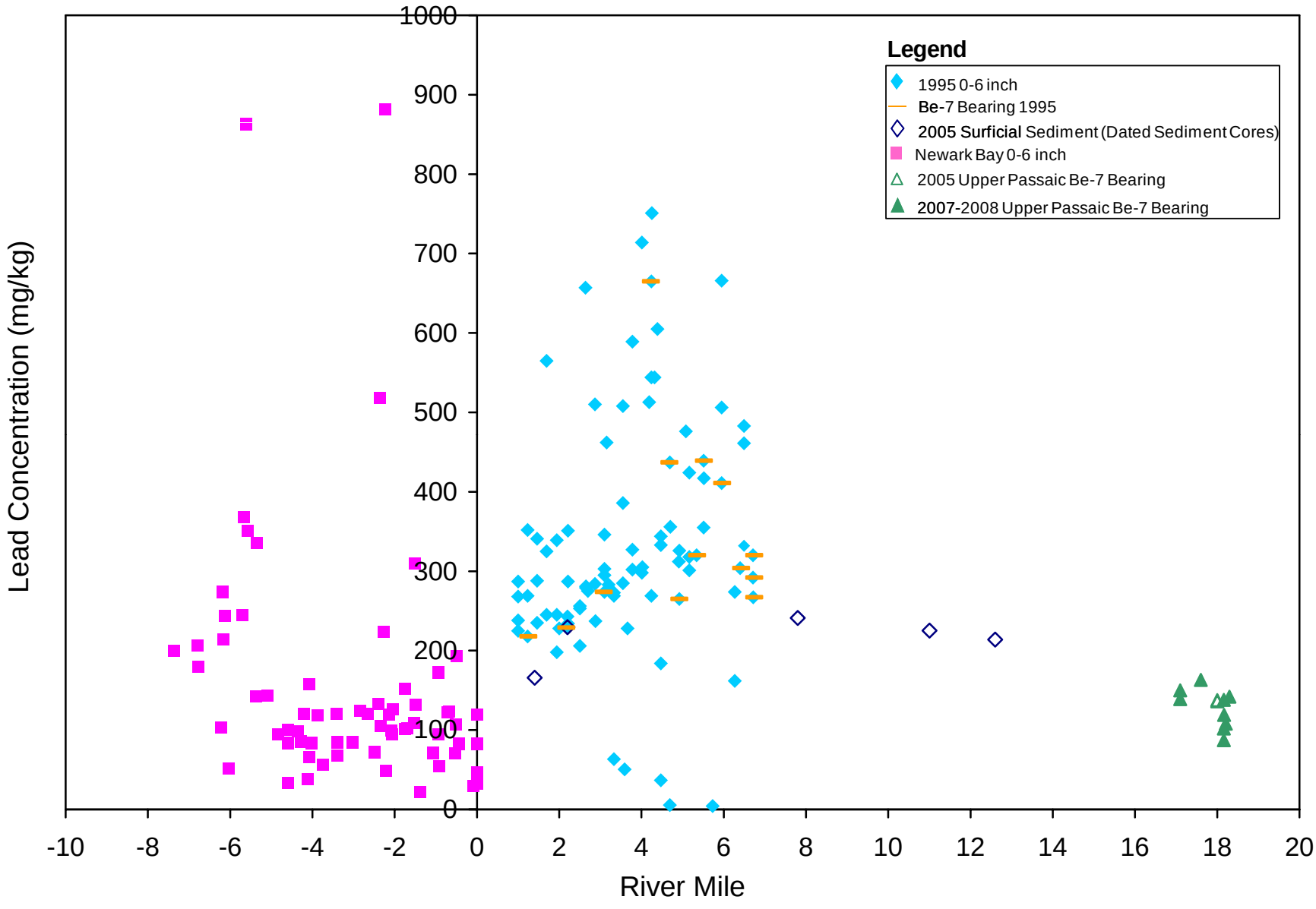
2009



Copper versus River Mile
Be-7 Bearing Samples
Lower Passaic – Newark Bay – Upper Passaic
Lower Passaic River Restoration Project

Figure 14-4d

2009

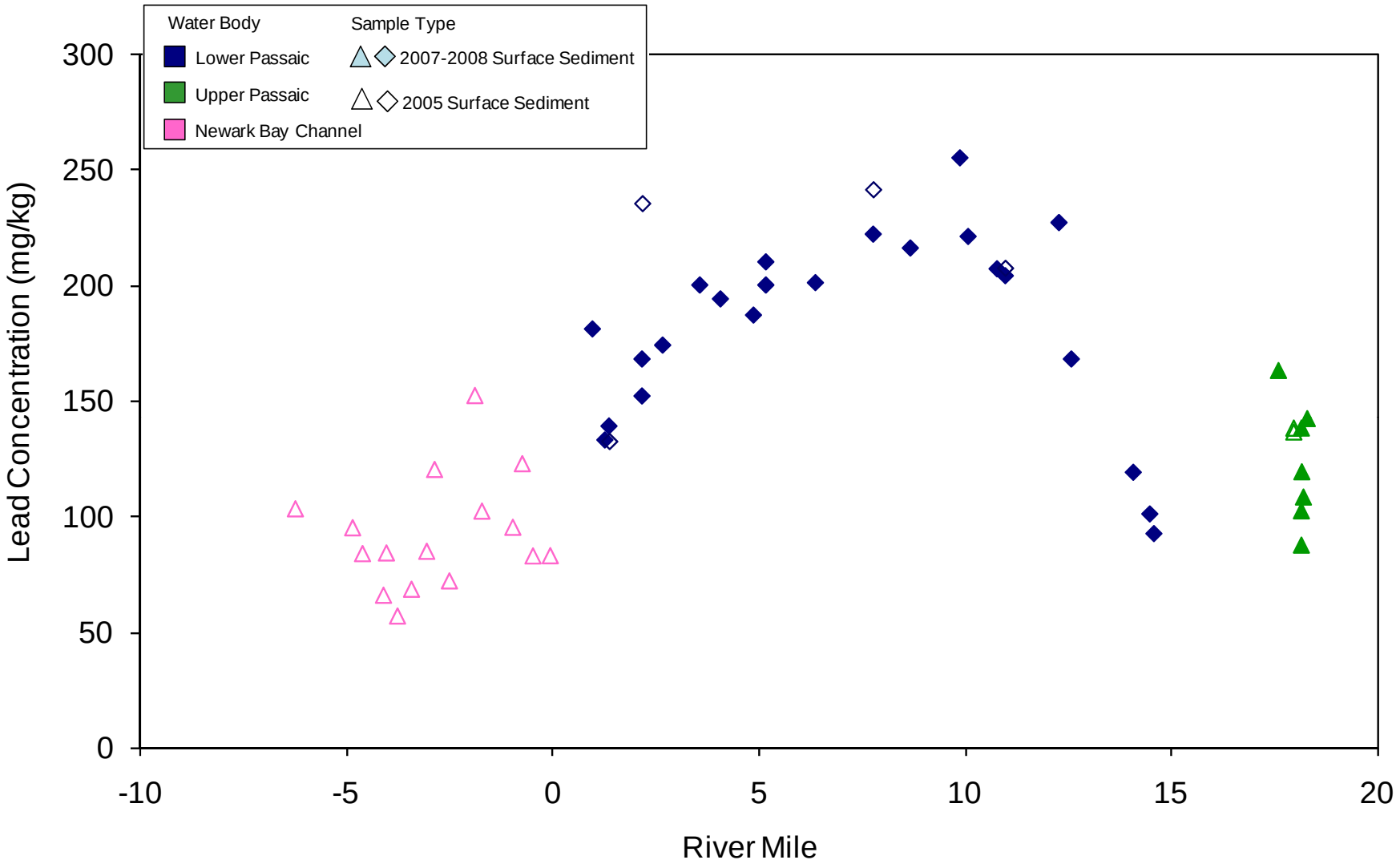


Lead versus River Mile
1995 & 2005 TSI and 2005-2008 USEPA Data

Lower Passaic River Restoration Project

Figure 14-4e

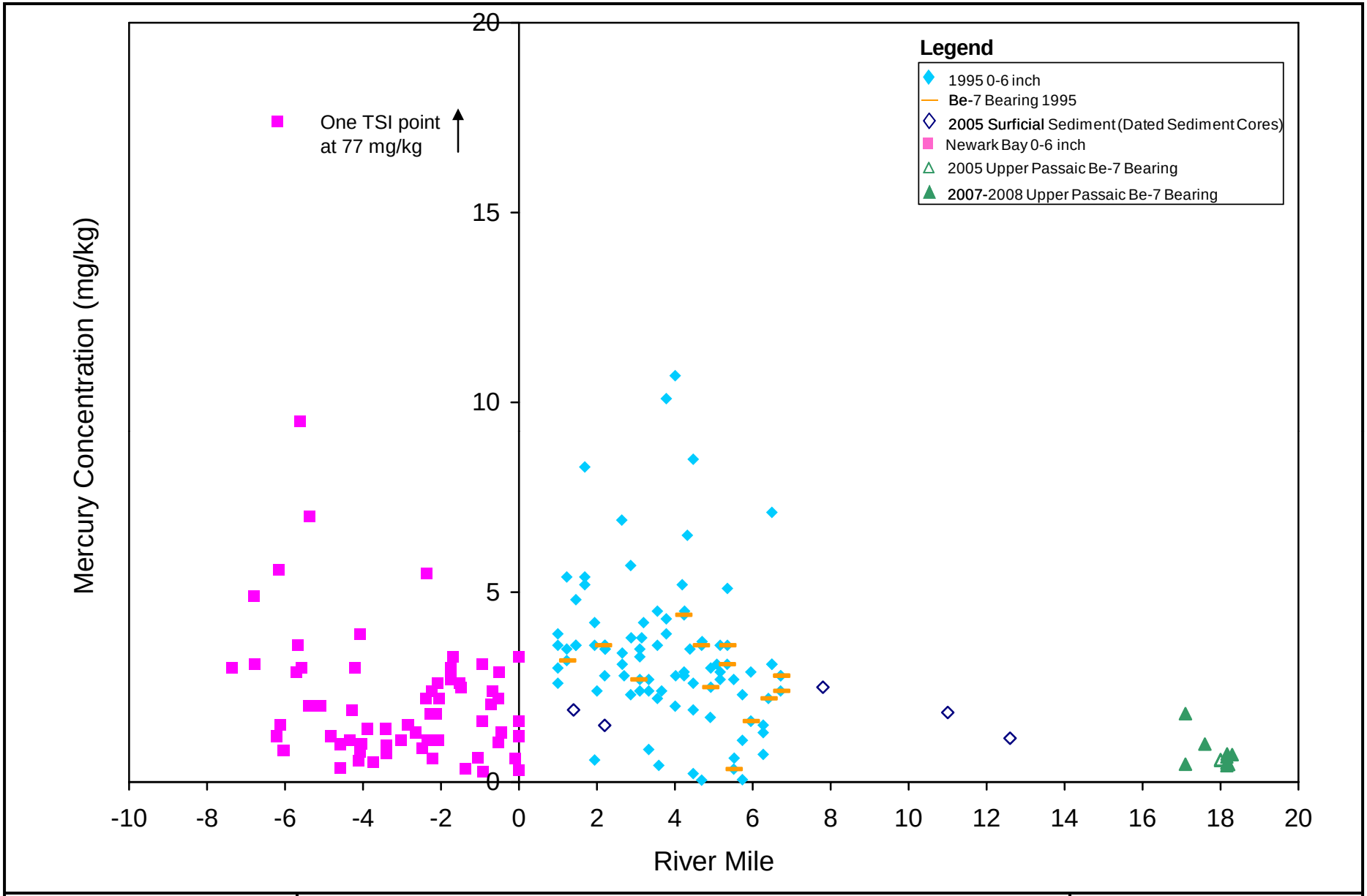
2009



Lead versus River Mile
Be-7 Bearing Samples
Lower Passaic – Newark Bay – Upper Passaic
Lower Passaic River Restoration Project

Figure 14-4f

2009

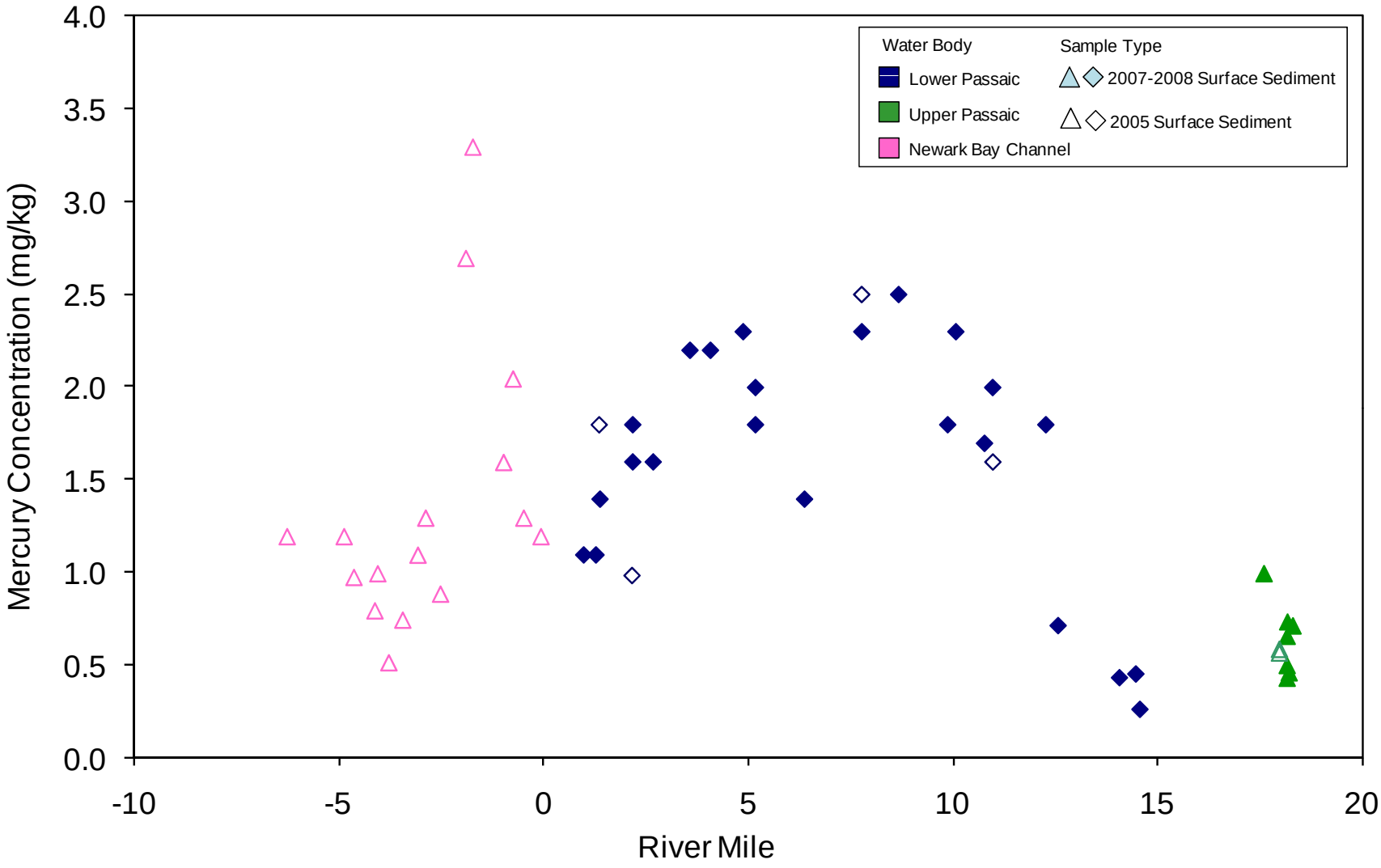


Mercury versus River Mile
1995 & 2005 TSI and 2005-2008 USEPA Data

Lower Passaic River Restoration Project

Figure 14-4g

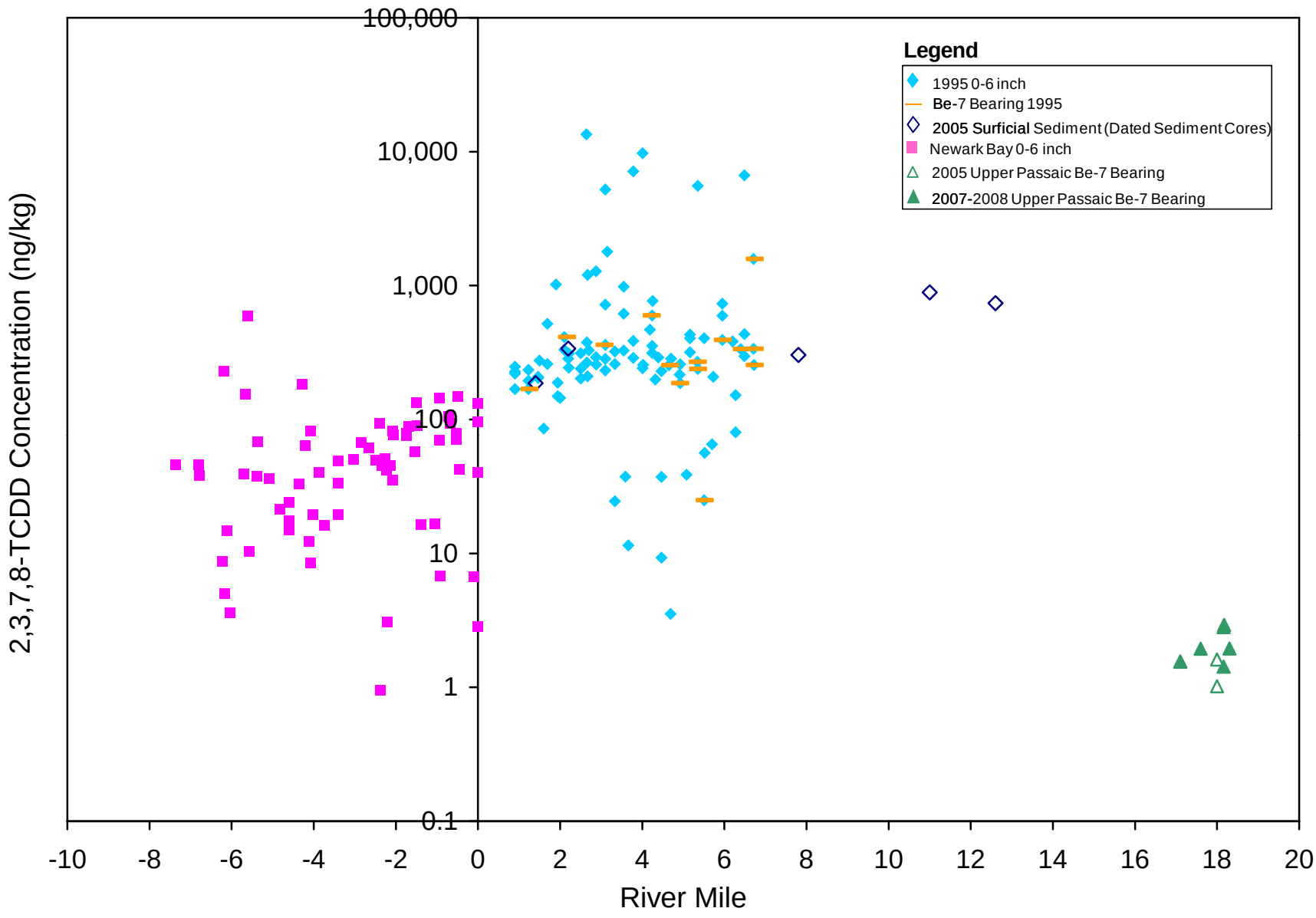
2009



Mercury versus River Mile
Be-7 Bearing Samples
Lower Passaic – Newark Bay – Upper Passaic
Lower Passaic River Restoration Project

Figure 14-4h

2009

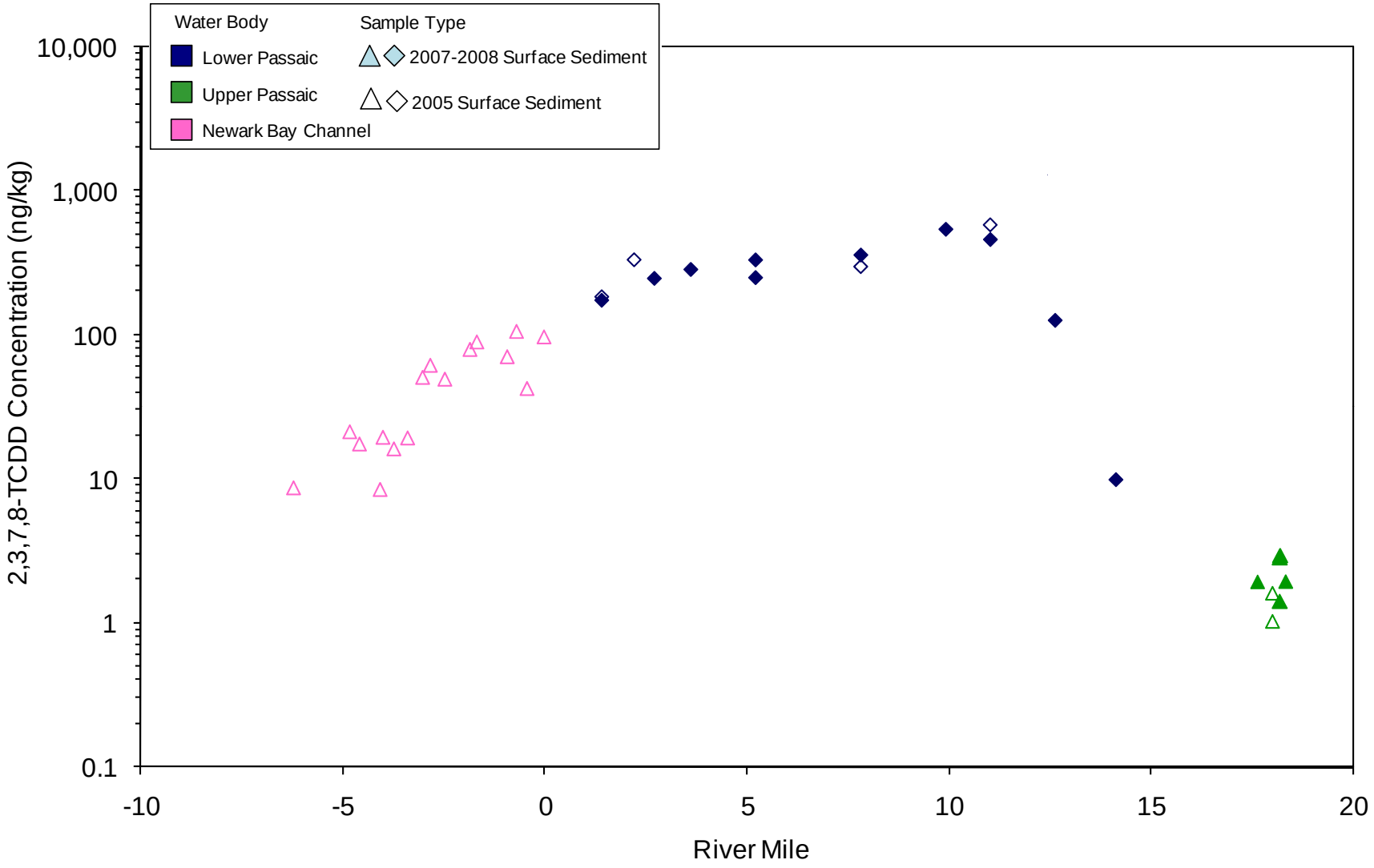


2,3,7,8-TCDD versus River Mile
1995 & 2005 TSI and 2005-2008 USEPA Data

Lower Passaic River Restoration Project

Figure 14-4i

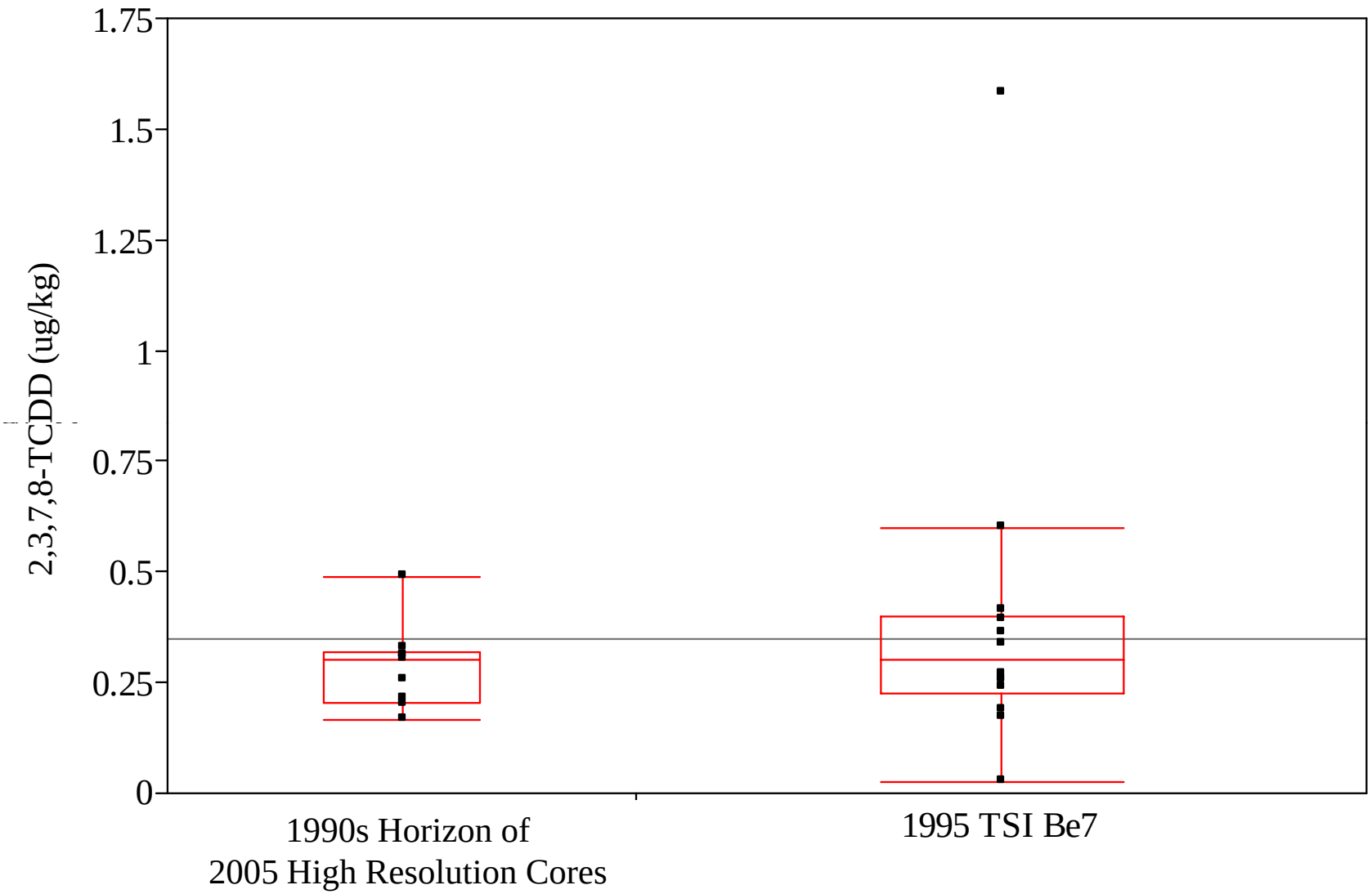
2009



2,3,7,8-TCDD versus River Mile
Be-7 Bearing Samples
Lower Passaic – Newark Bay – Upper Passaic
Lower Passaic River Restoration Project

Figure 14-4j

2009

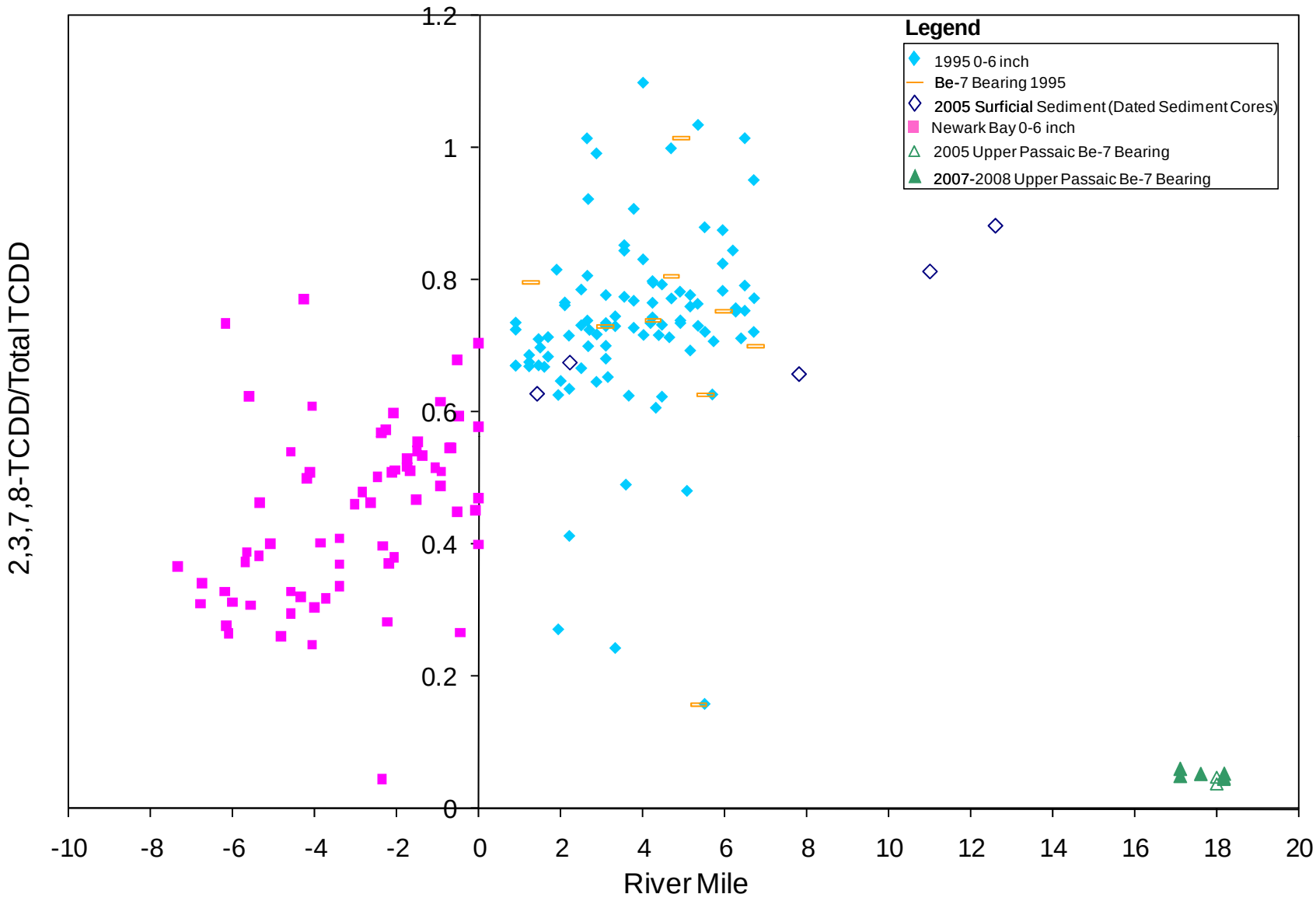


Comparison between 1995 Be-7 Bearing Surface TCDD and 1990s Horizon of the 2005 High Resolution Cores

Lower Passaic River Restoration Project

Figure 14-4k

2009

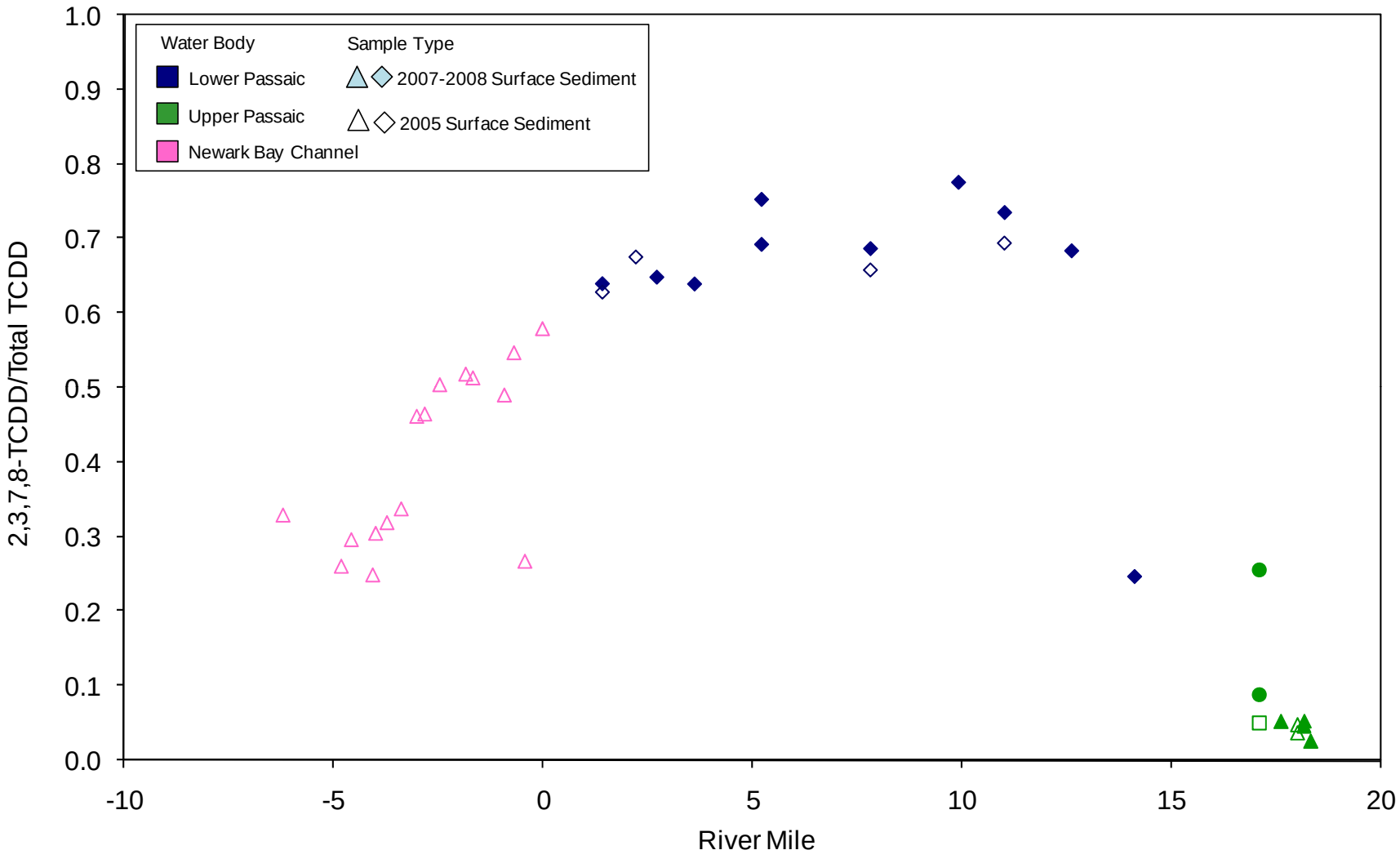


2,3,7,8-TCDD/Total TCDD versus River Mile
1995 & 2005 TSI and 2005-2008 USEPA Data

Lower Passaic River Restoration Project

Figure 14-4l

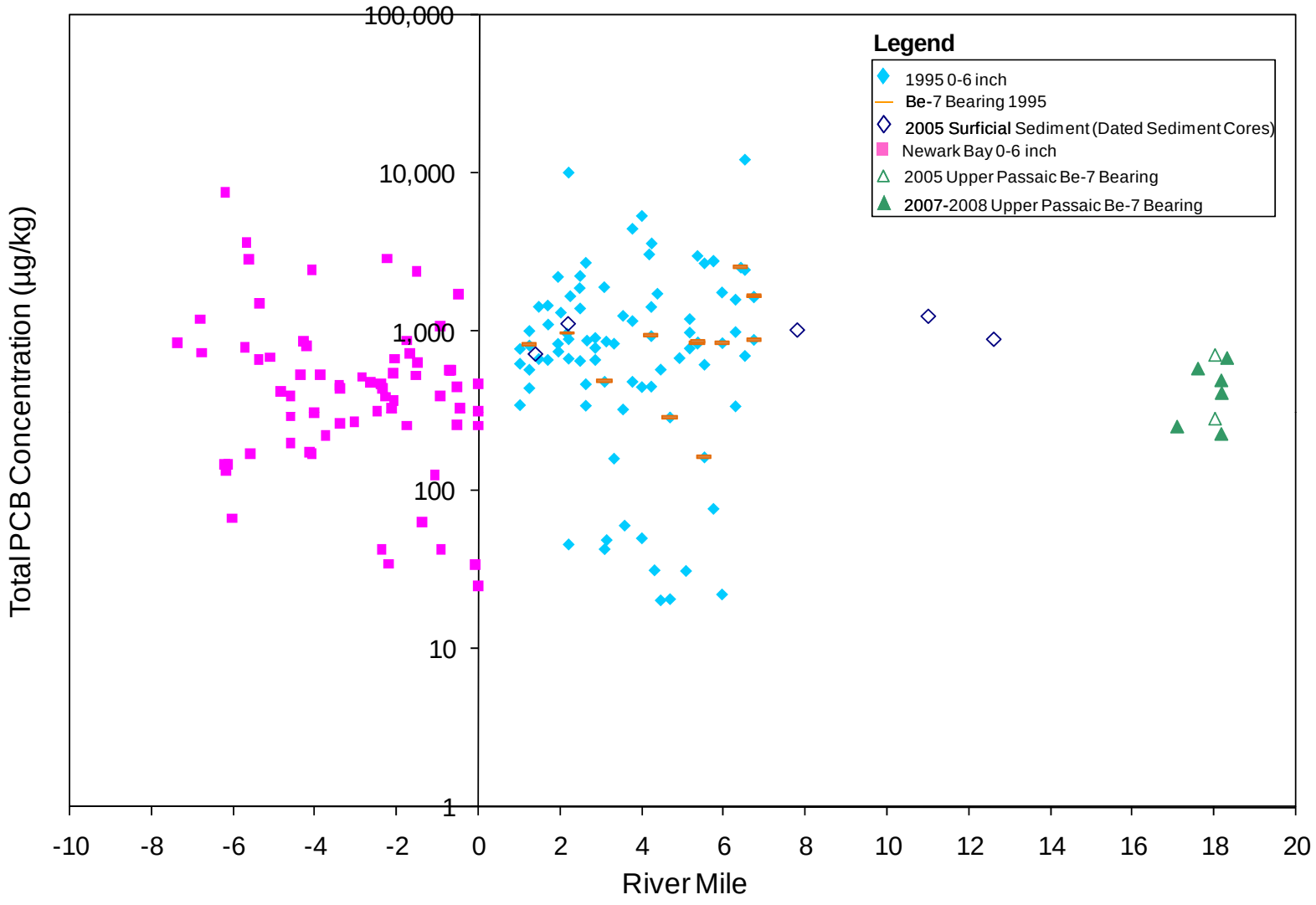
2009



2,3,7,8-TCDD/Total TCDD versus River Mile
Be-7 Bearing Samples
Lower Passaic – Newark Bay – Upper Passaic
Lower Passaic River Restoration Project

Figure 14-4m

2009

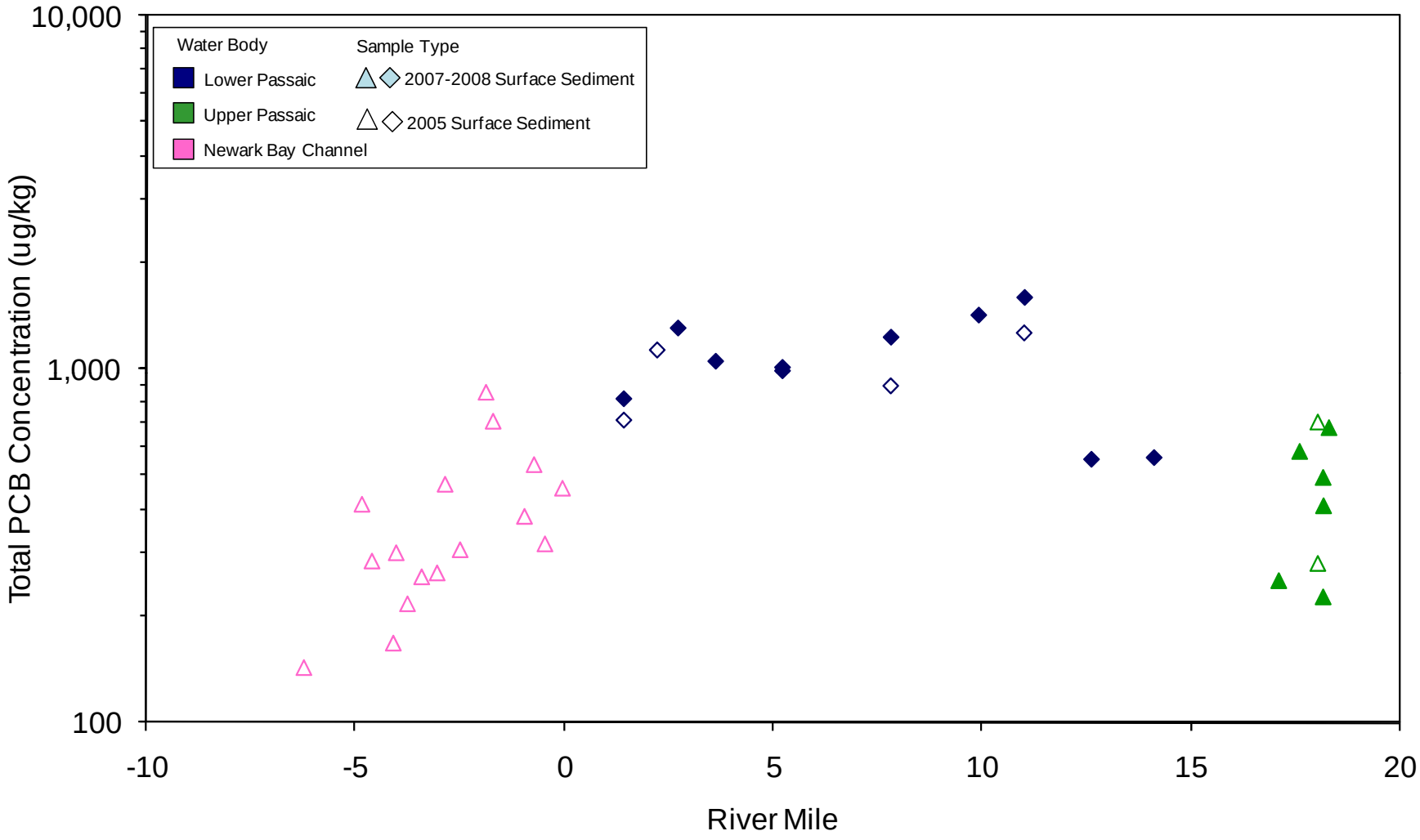


Total PCBs versus River Mile
1995 & 2005 TSI and 2005-2008 USEPA Data

Lower Passaic River Restoration Project

Figure 14-4n

2009

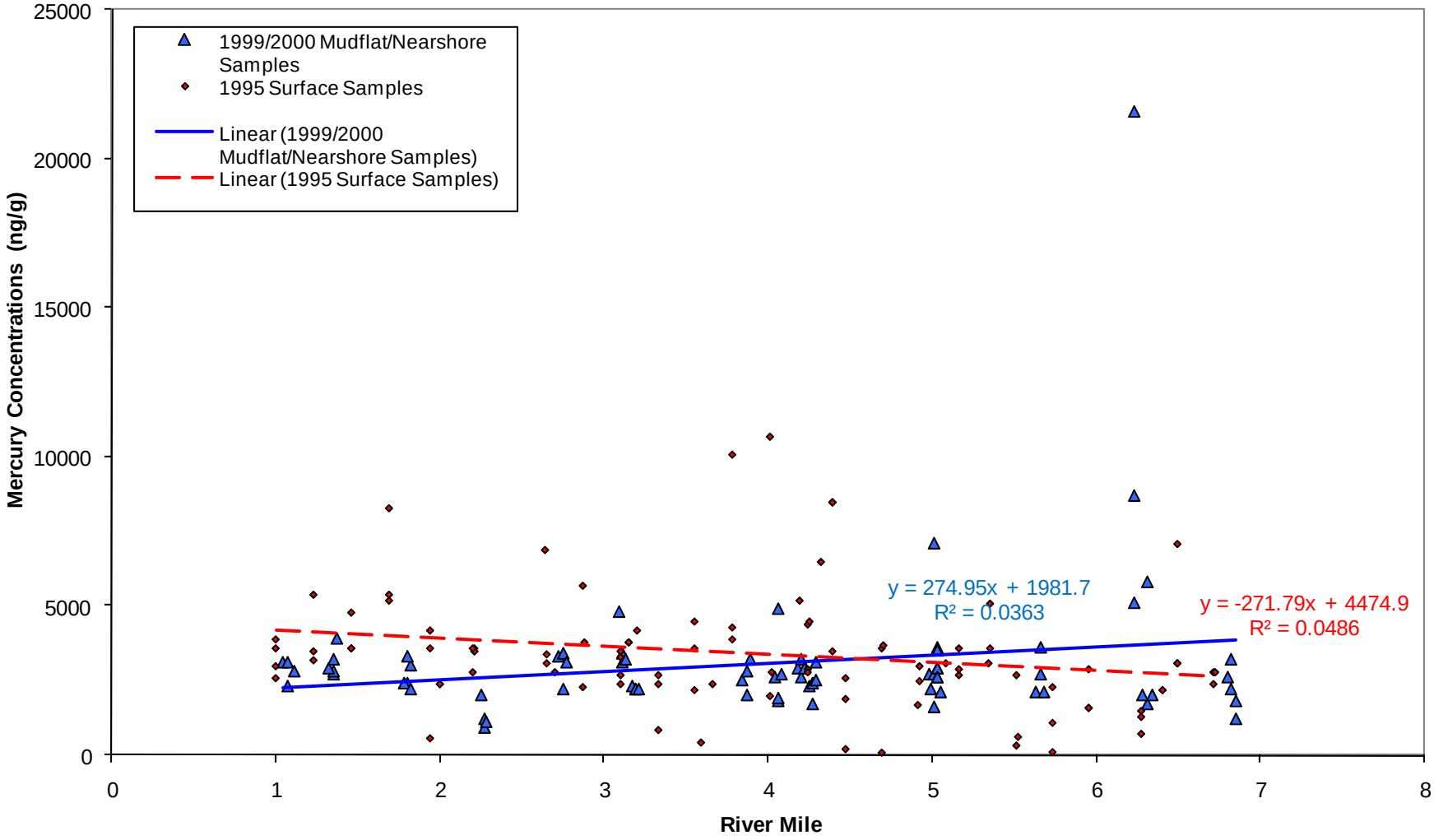


Total PCBs versus River Mile
Be-7 Bearing Samples
Lower Passaic – Newark Bay – Upper Passaic
Lower Passaic River Restoration Project

Figure 14-4o

2009

Note: Poor R^2 value indicates no correlation with river mile.



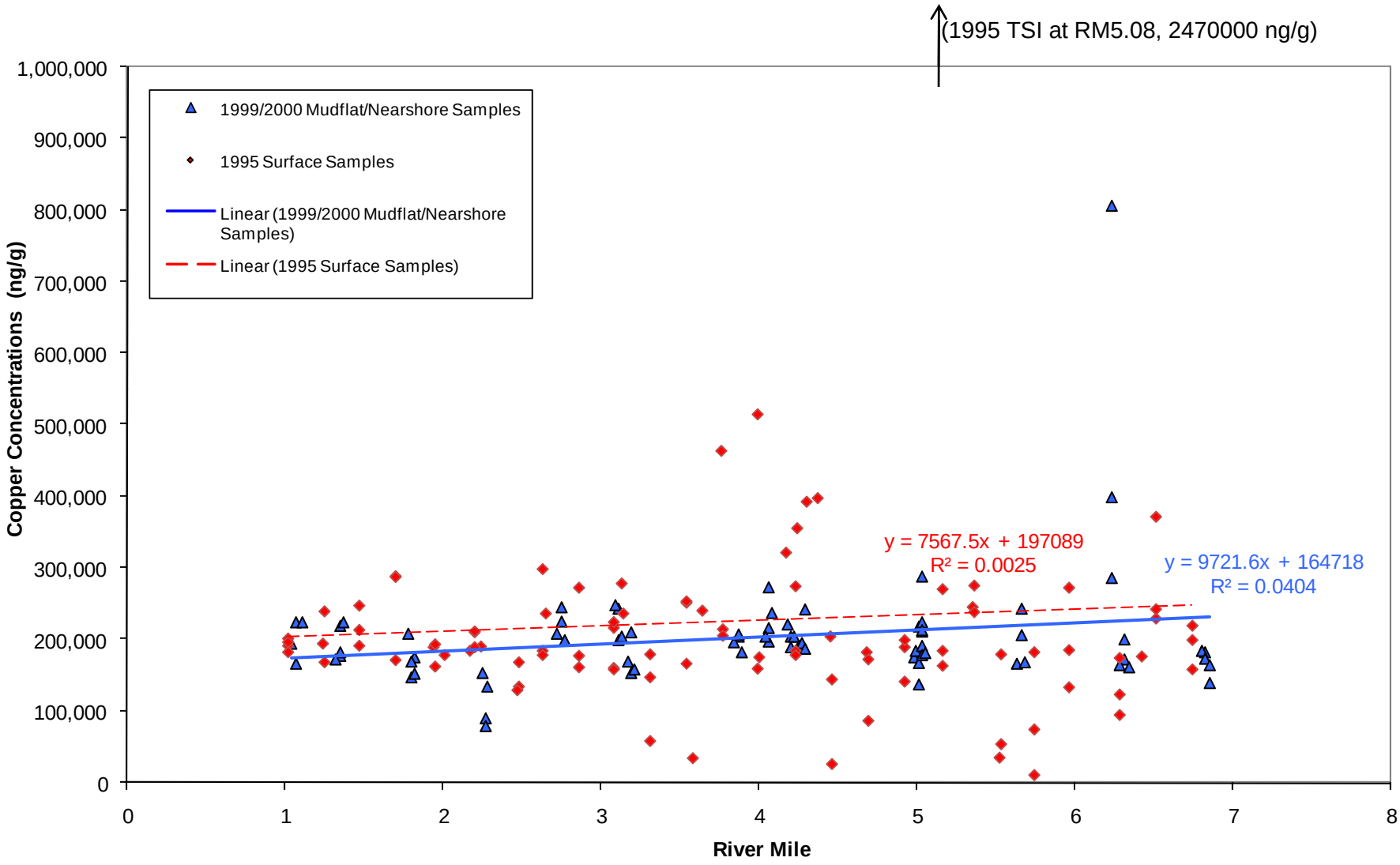
1999/2000 Mudflat/Nearshore and 1995 TSI Surface Sediment Samples
Mercury versus River Mile

Lower Passaic River Restoration Project

Figure 14-5a

2009

Note: Poor R^2 value indicates no correlation with river mile.



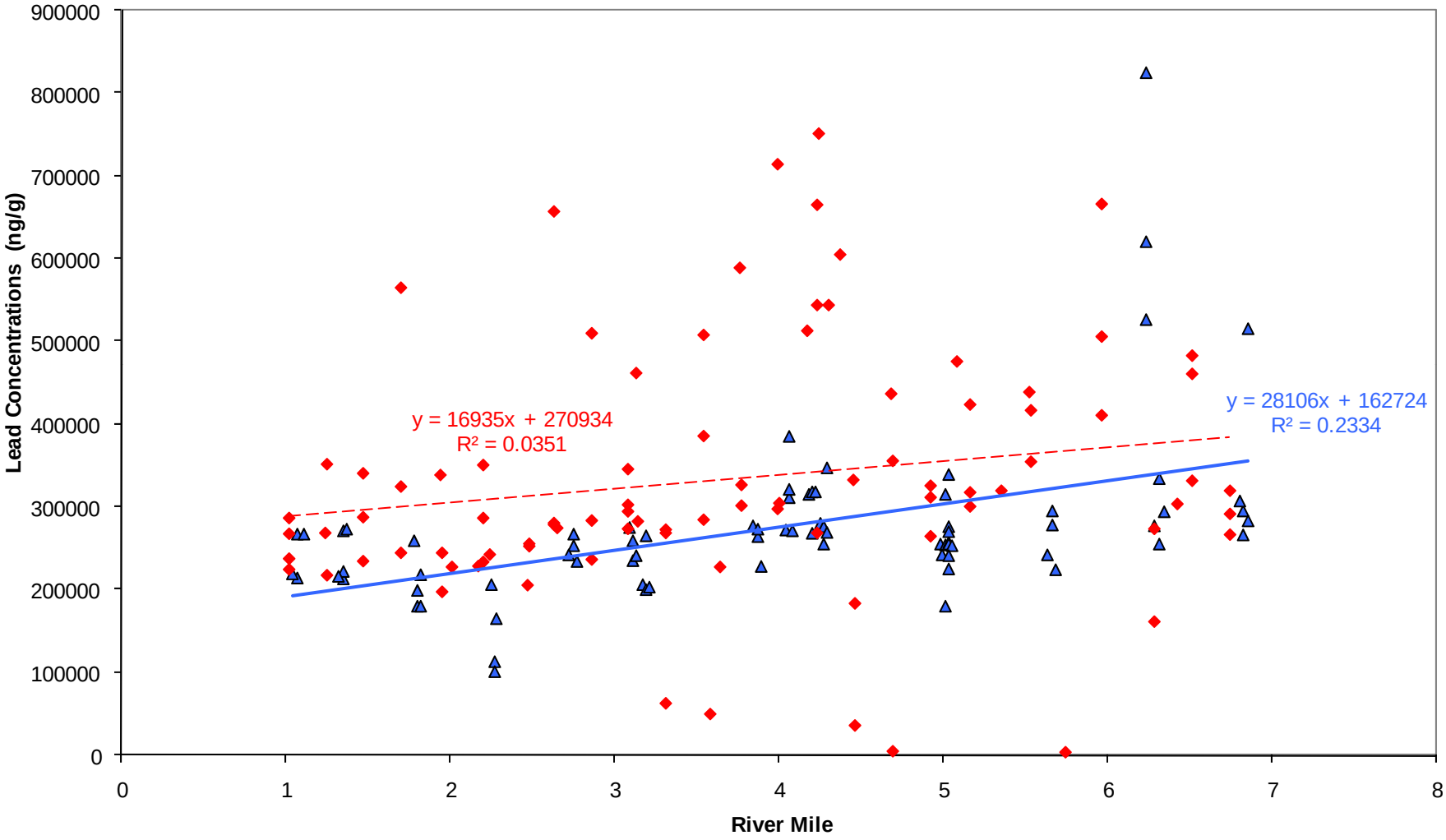
1999/2000 Mudflat/Nearshore and 1995 TSI Surface Sediment Samples
Copper versus River Mile

Lower Passaic River Restoration Project

Figure 14-5b

2009

Note: Weak correlation between lead concentration and river mile due to high lead values at RM6 to RM7.



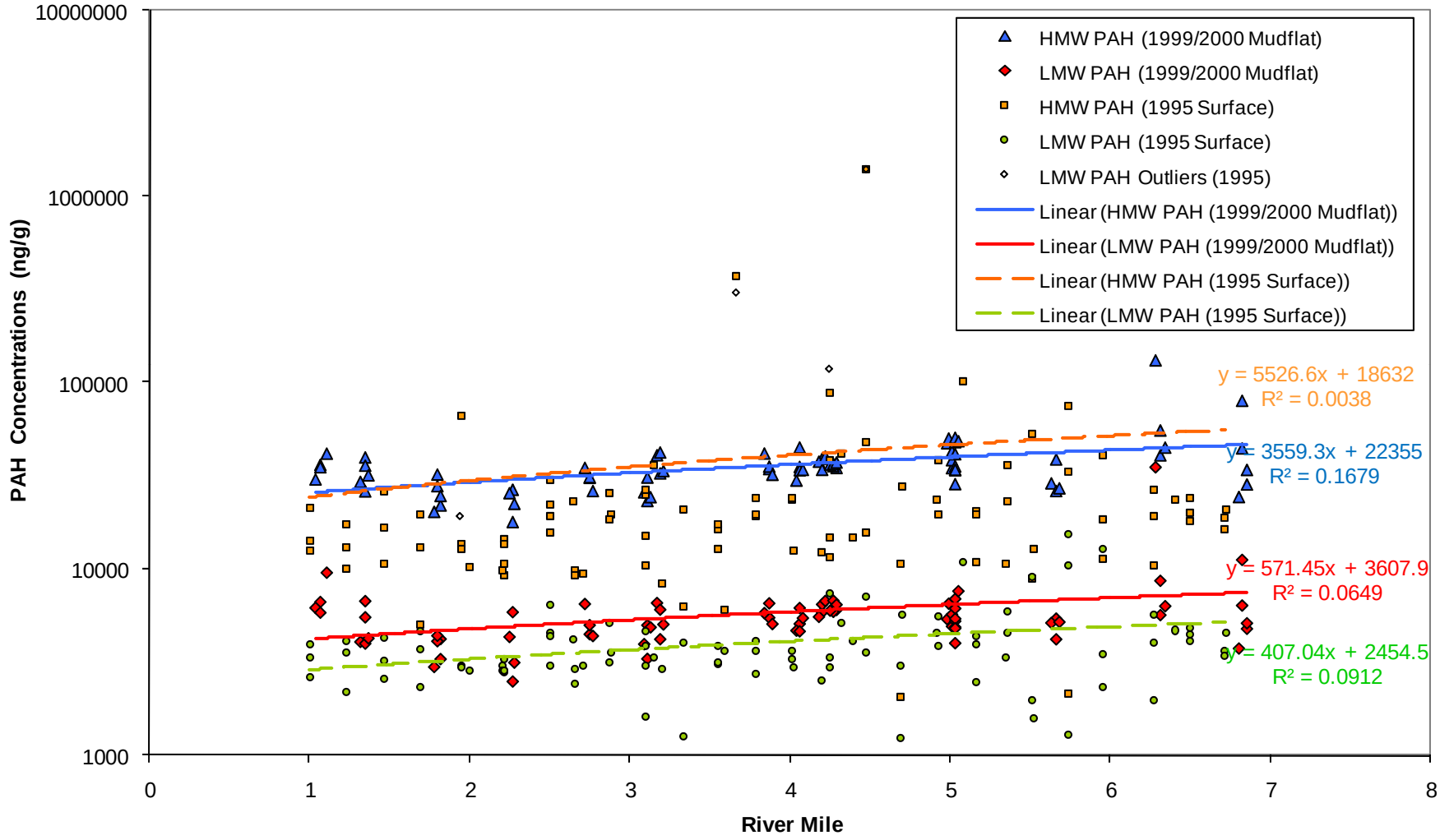
1999/2000 Mudflat/Nearshore and 1995 TSI Surface Sediment Samples
Lead versus River Mile

Lower Passaic River Restoration Project

Figure 14-5c

2009

Note: Poor R^2 value indicates no correlation with river mile.



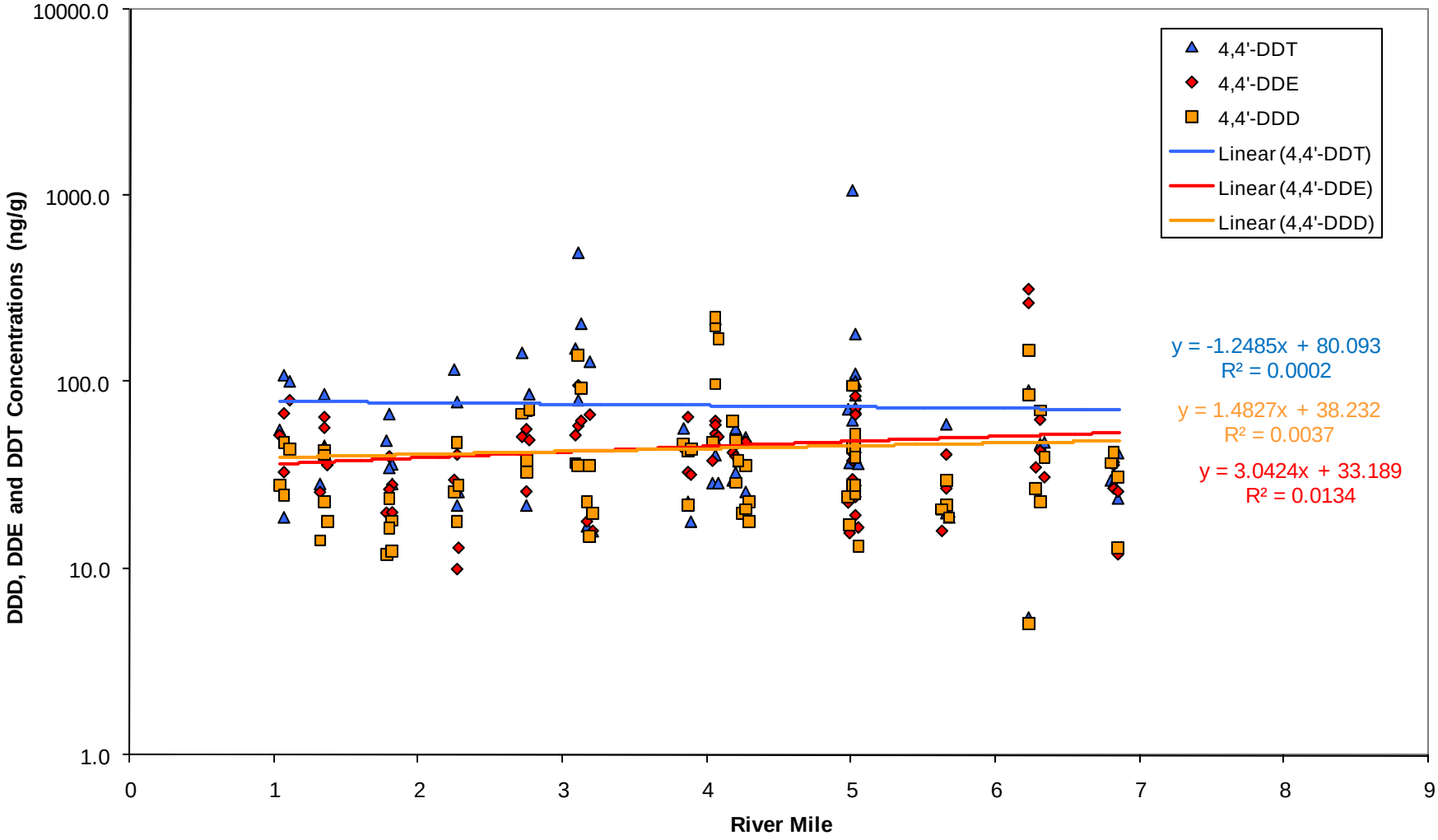
1999/2000 Mudflat/Nearshore and 1995 TSI Surface Sediment Samples
PAH versus River Mile

Lower Passaic River Restoration Project

Figure 14-5d

2009

Note: Poor R^2 value indicates no correlation with river mile.



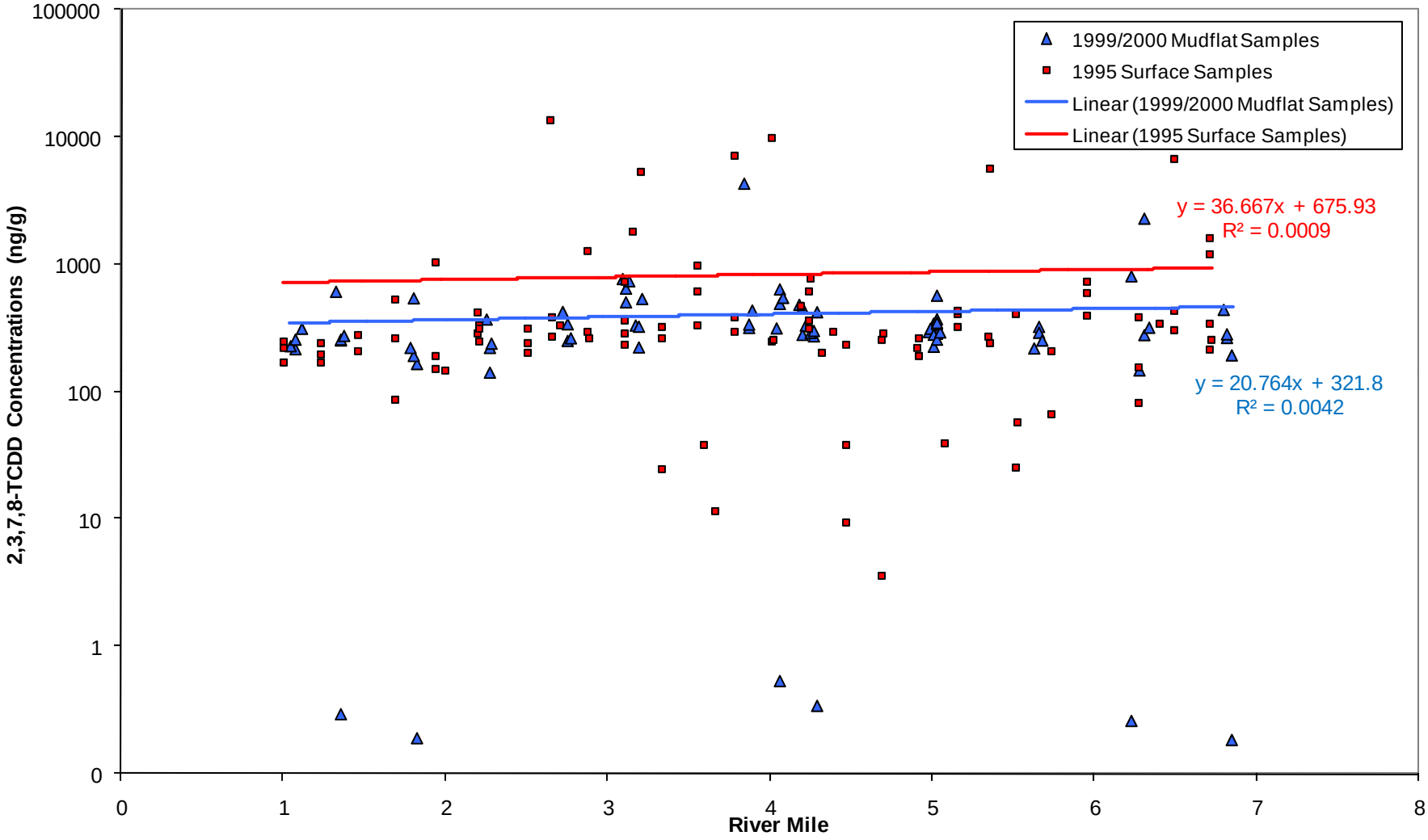
1999/2000 Mudflat/Nearshore Surface Sediment Samples
DDD, DDE, DDT versus River Mile

Lower Passaic River Restoration Project

Figure 14-5e

2009

Note: Poor R^2 value indicates no correlation with river mile.



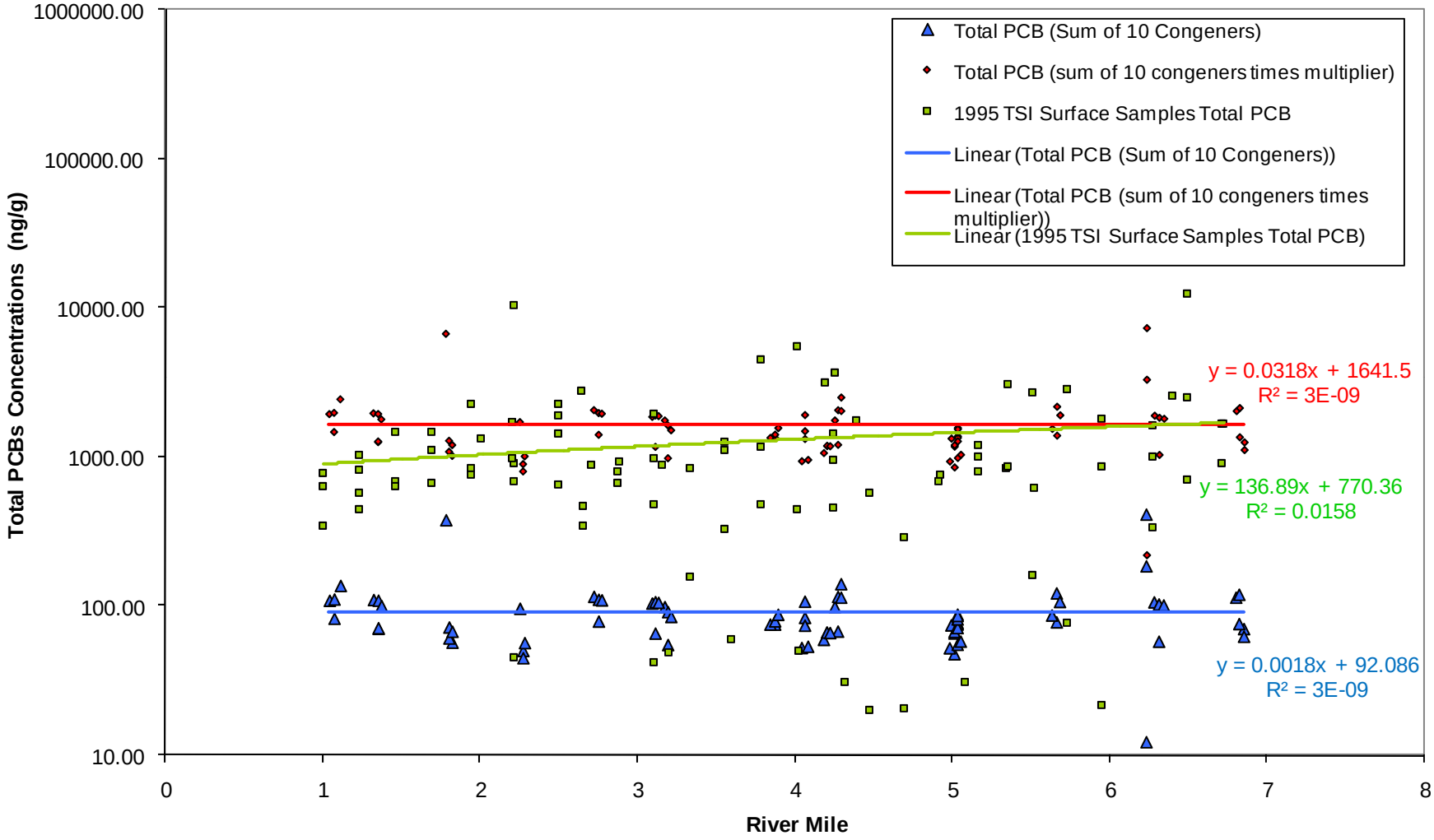
1999/2000 Mudflat/Nearshore and 1995 TSI Surface Sediment Samples
2,3,7,8-TCDD versus River Mile

Lower Passaic River Restoration Project

Figure 14-5f

2009

Note: Poor R^2 value indicates no correlation with river mile.



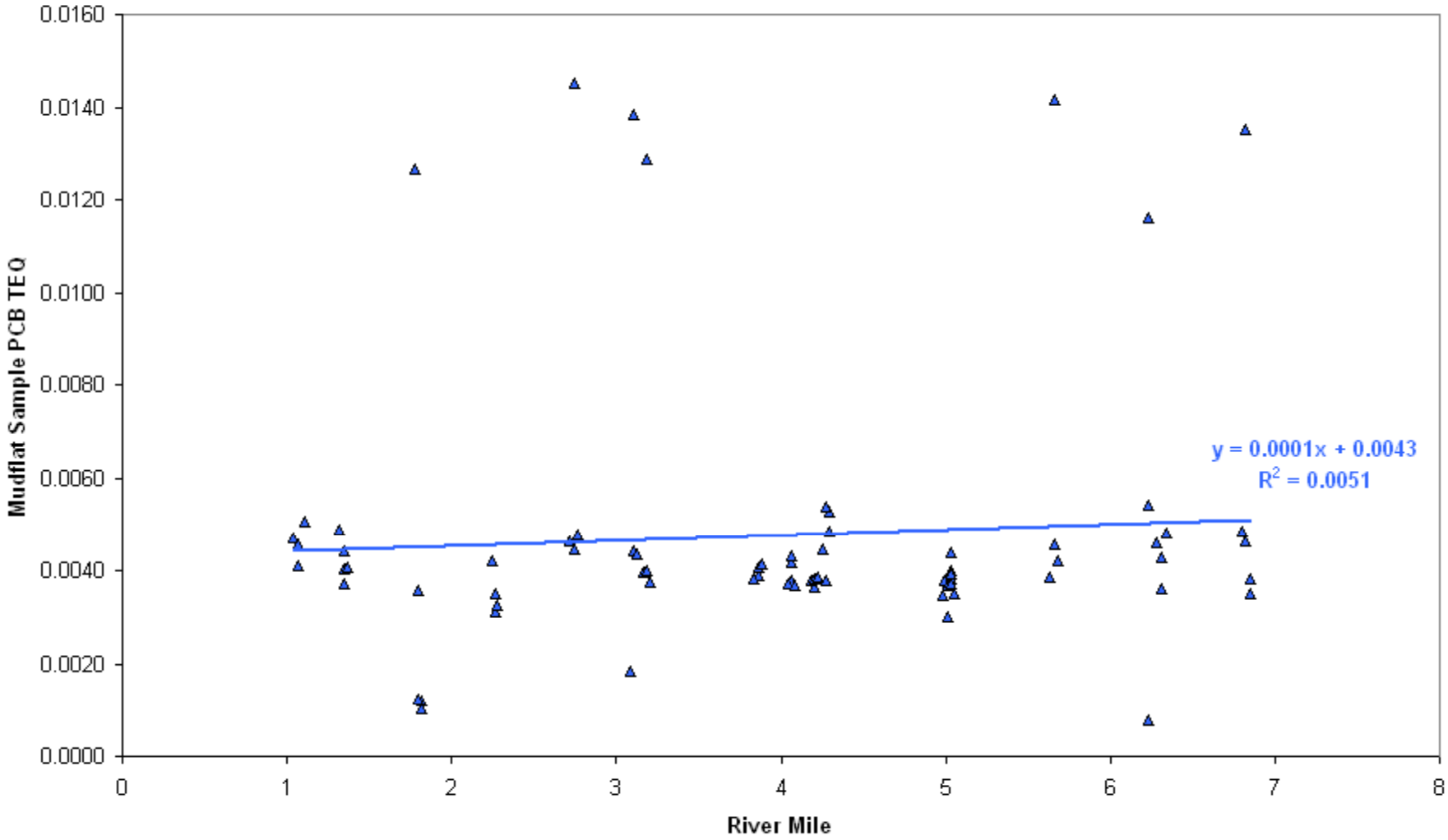
1999/2000 Mudflat/Nearshore and 1995 TSI Surface Sediment Samples
Total PCB (Sum of 10 Congeners) versus River Mile

Lower Passaic River Restoration Project

Figure 14-5g

2009

Note: Poor R^2 value indicates no correlation with river mile.



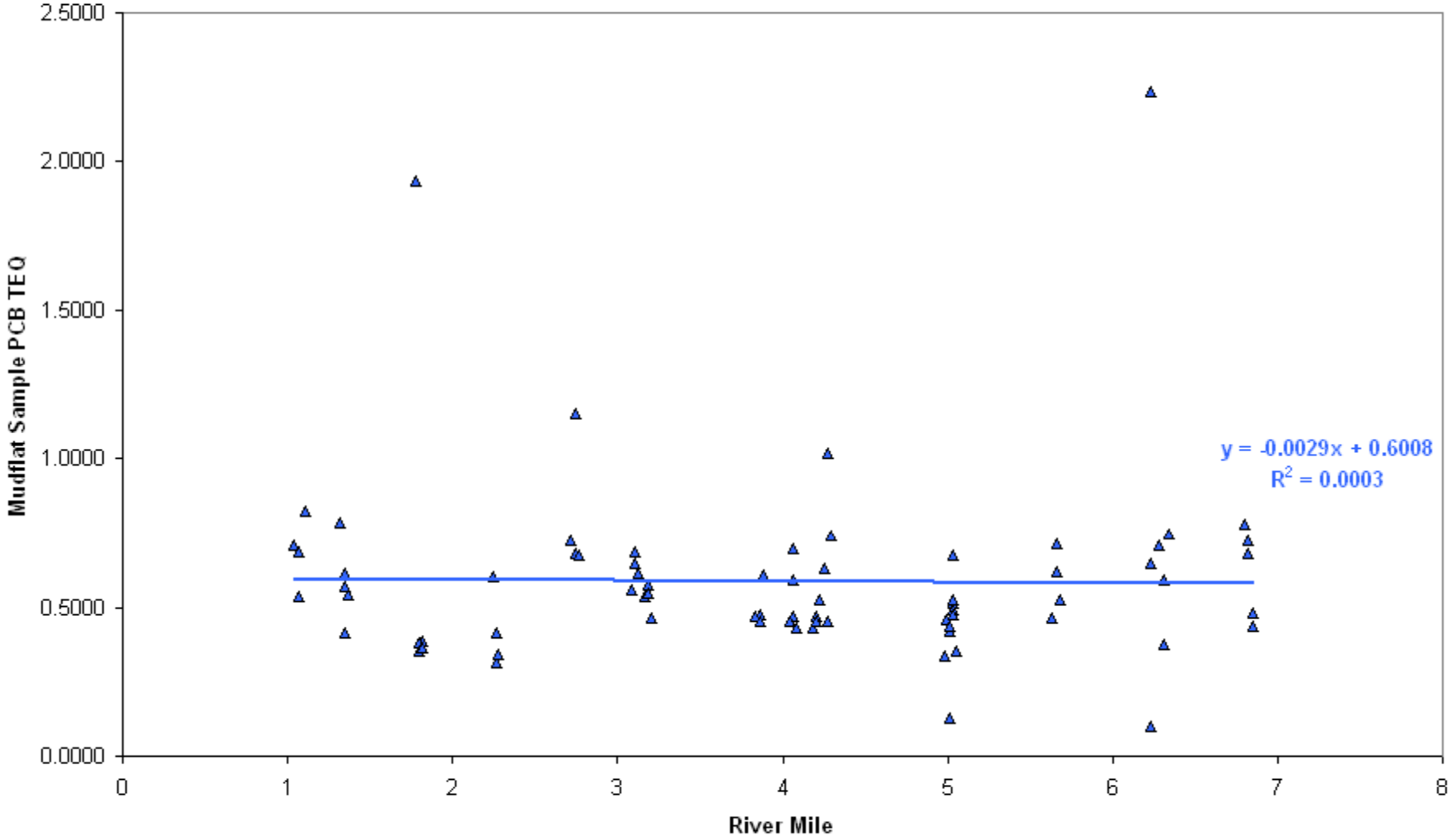
1999/2000 Mudflat/Nearshore Surface Sediment Samples
PCB TEQ (Fish) versus River Mile

Lower Passaic River Restoration Project

Figure 14-6a

2009

Note: Poor R^2 value indicates no correlation with river mile.



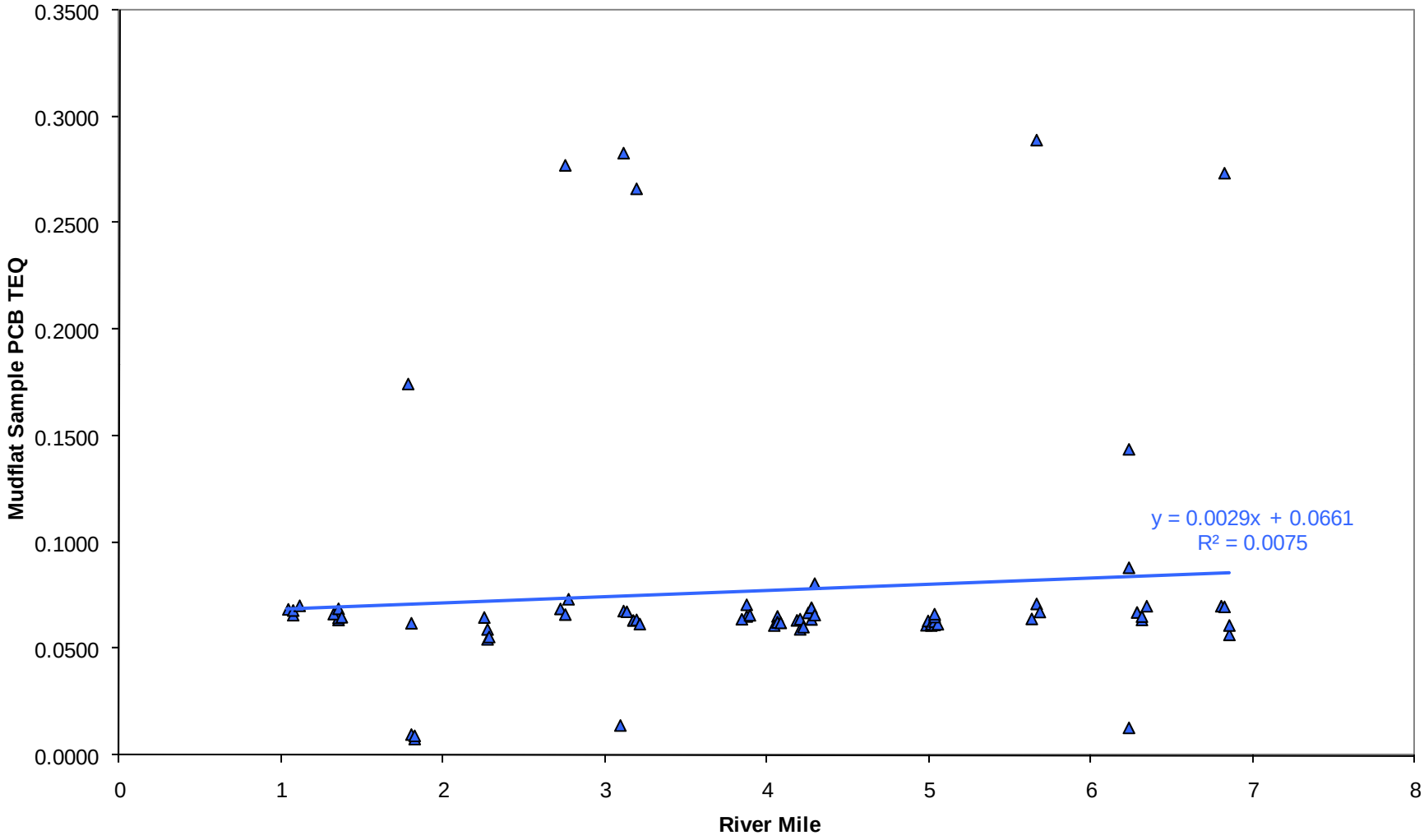
1999/2000 Mudflat/Nearshore Surface Sediment Samples
PCB TEQ (Bird) versus River Mile

Lower Passaic River Restoration Project

Figure 14-6b

2009

Note: Poor R^2 value indicates no correlation with river mile.

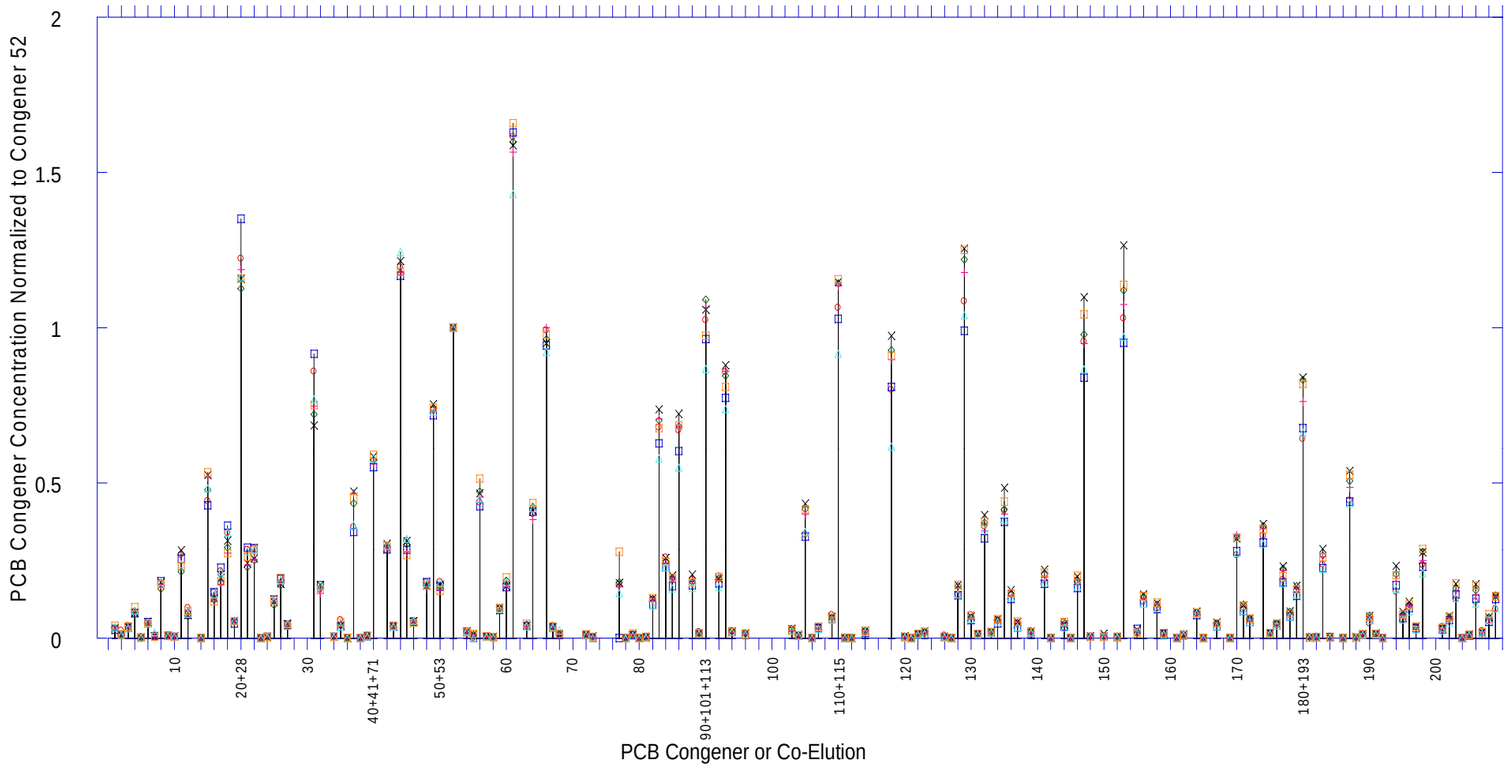


1999/2000 Mudflat/Nearshore Surface Sediment Samples
PCB TEQ (Mammal) versus River Mile

Lower Passaic River Restoration Project

Figure 14-6c

2009



Legend

- Dec5 Downriver
- Dec6 Downriver
- Dec6 Upriver
- Dec7 Upriver
- Dec8 Upriver
- Dec10 Downriver
- Dec12 Downriver

Notes

Upriver and downriver refer to the flow direction as it changes with the tide.

“Dec5 Downriver” represents the average PCB congener concentration from morning and afternoon samples collected on December 5, 2005.

“Dec6 Downriver” represents the average PCB congener concentration from morning and afternoon samples collected on December 6, 2005.

“Dec6 Upriver” represents the average PCB congener concentration from morning and afternoon samples collected on December 6, 2005.

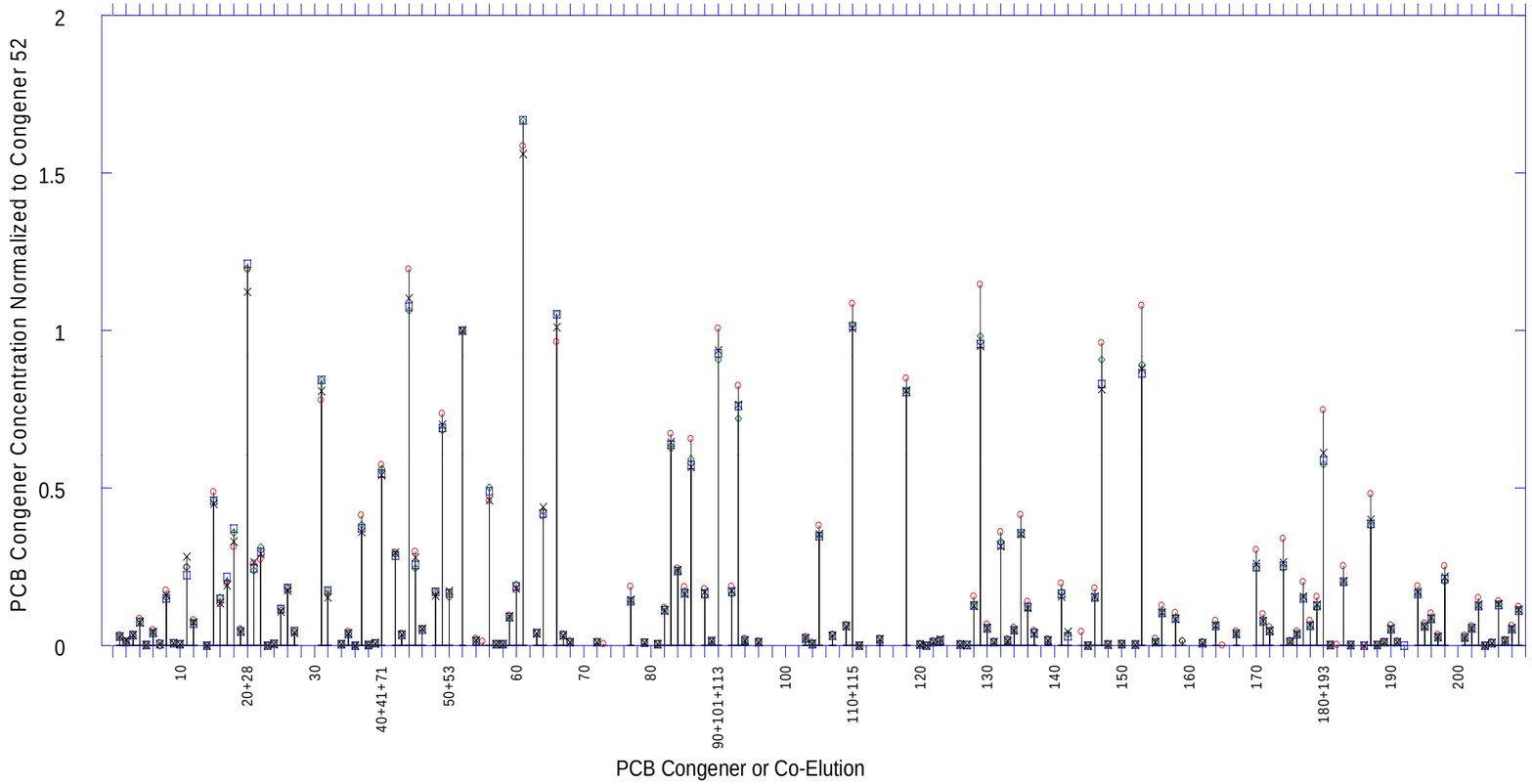
“Dec10 Downriver” represents the average PCB congener concentration from morning and afternoon samples collected on December 10, 2005.

PCB Congener Concentration Normalized to Congener 52 Pattern on Suspended Solids: USGS TOPS

Lower Passaic River Restoration Project

Figure 14-7a

2009



Legend

- Average USGS TOPS
- Field-Filtered TOPS
- Laboratory-Filtered TOPS
- Infiltrex

Notes

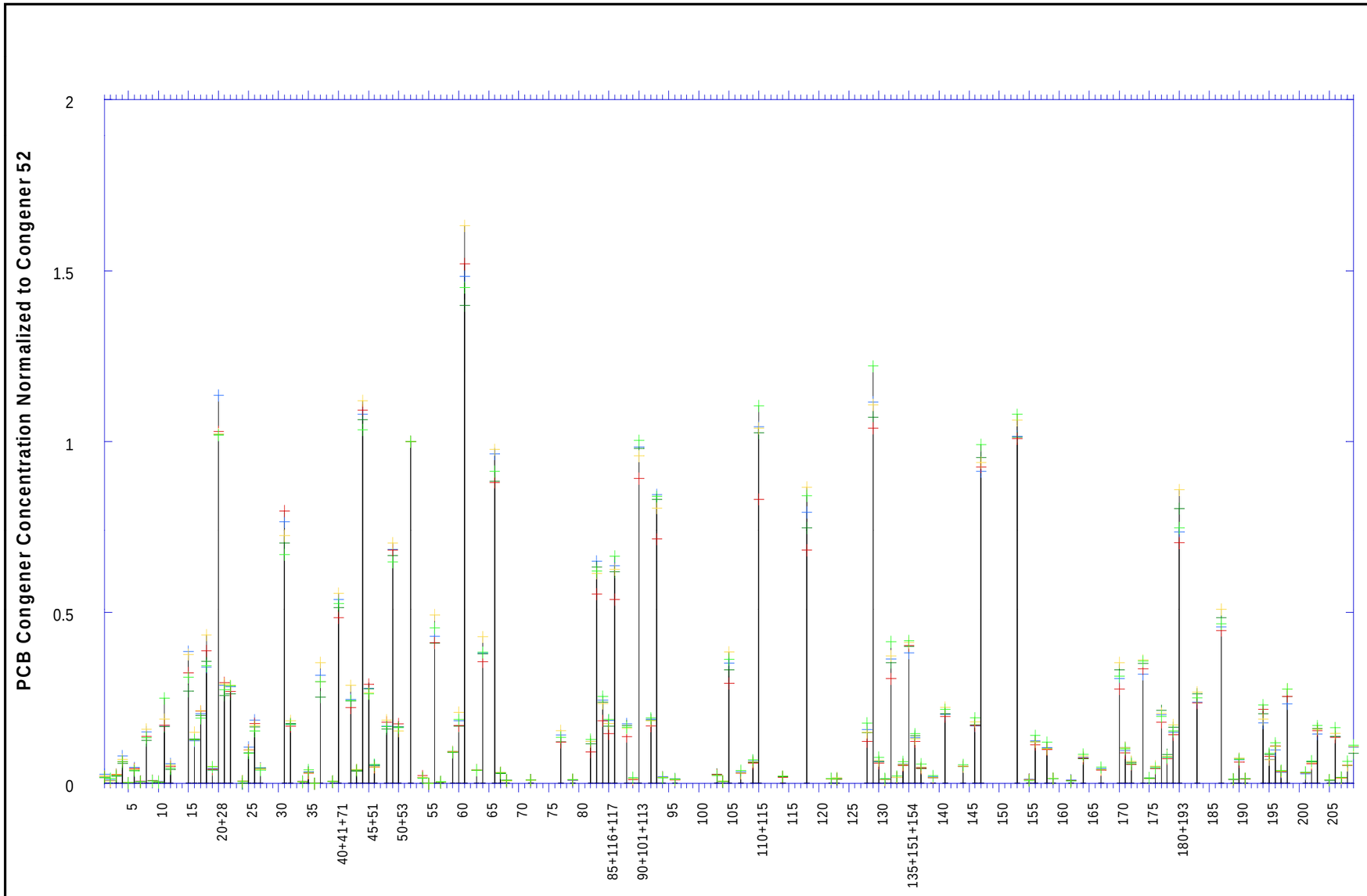
"Average USGS TOPS" represents the average PCB congener concentration from samples collected on December 5, 2005 through December 12, 2005.

PCB Congener Concentration Normalized to Congener 52 Pattern on Suspended Solids: USGS TOPS, Field-Filtered TOPS, Laboratory-Filtered TOPS, and Infiltrex

Lower Passaic River Restoration Project

Figure 14-7b

2009



Legend

- RM1.4
- RM2.2
- RM7.8
- RM11
- RM12.6

Notes

Normalized PCB congener concentration <0.01 are not plotted.

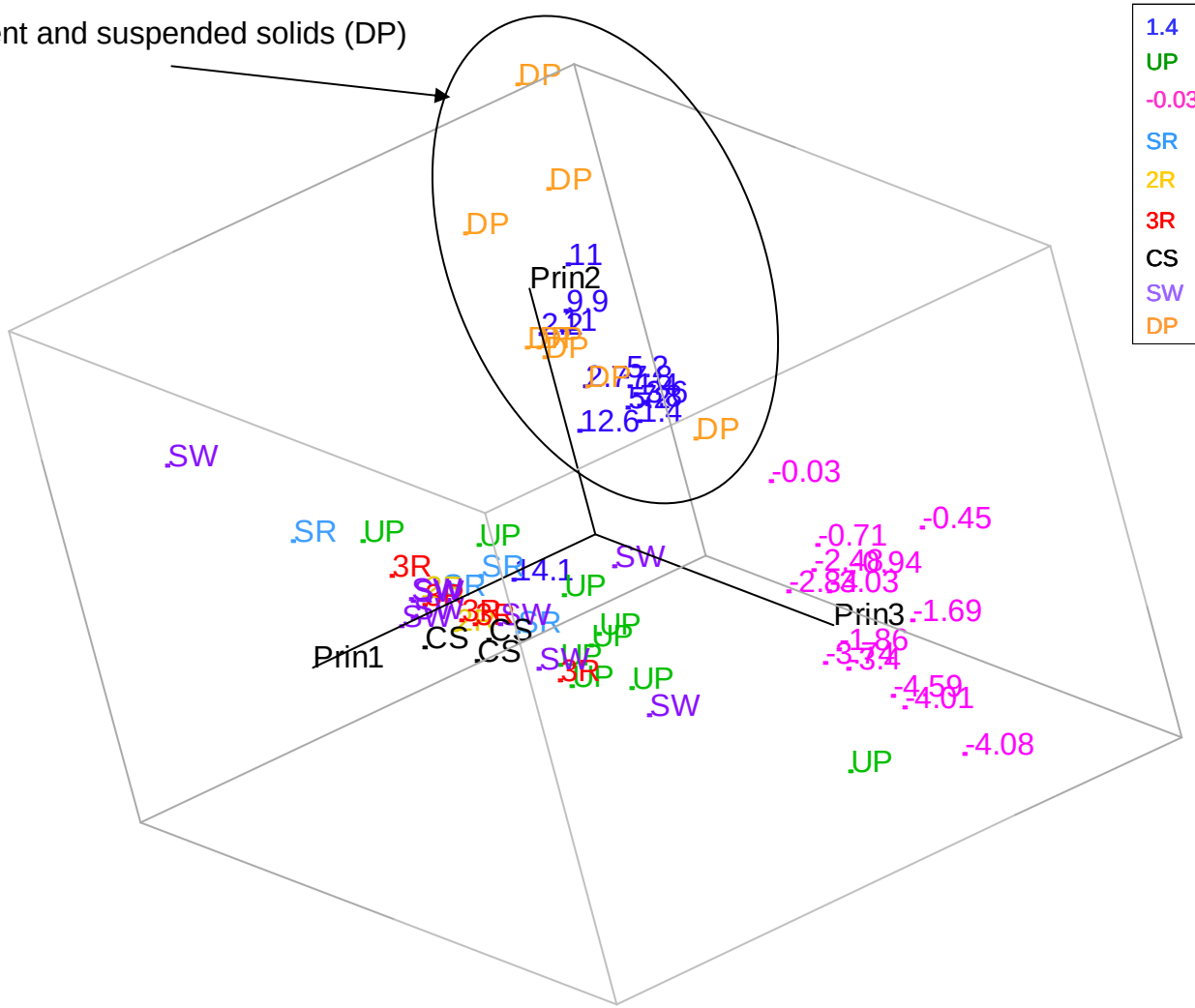
PCB Congeners Concentration Normalized to Congener 52 for the Lower Passaic River High Resolution Cores Surface Sediments

Lower Passaic River Restoration Project

Figure 14-8

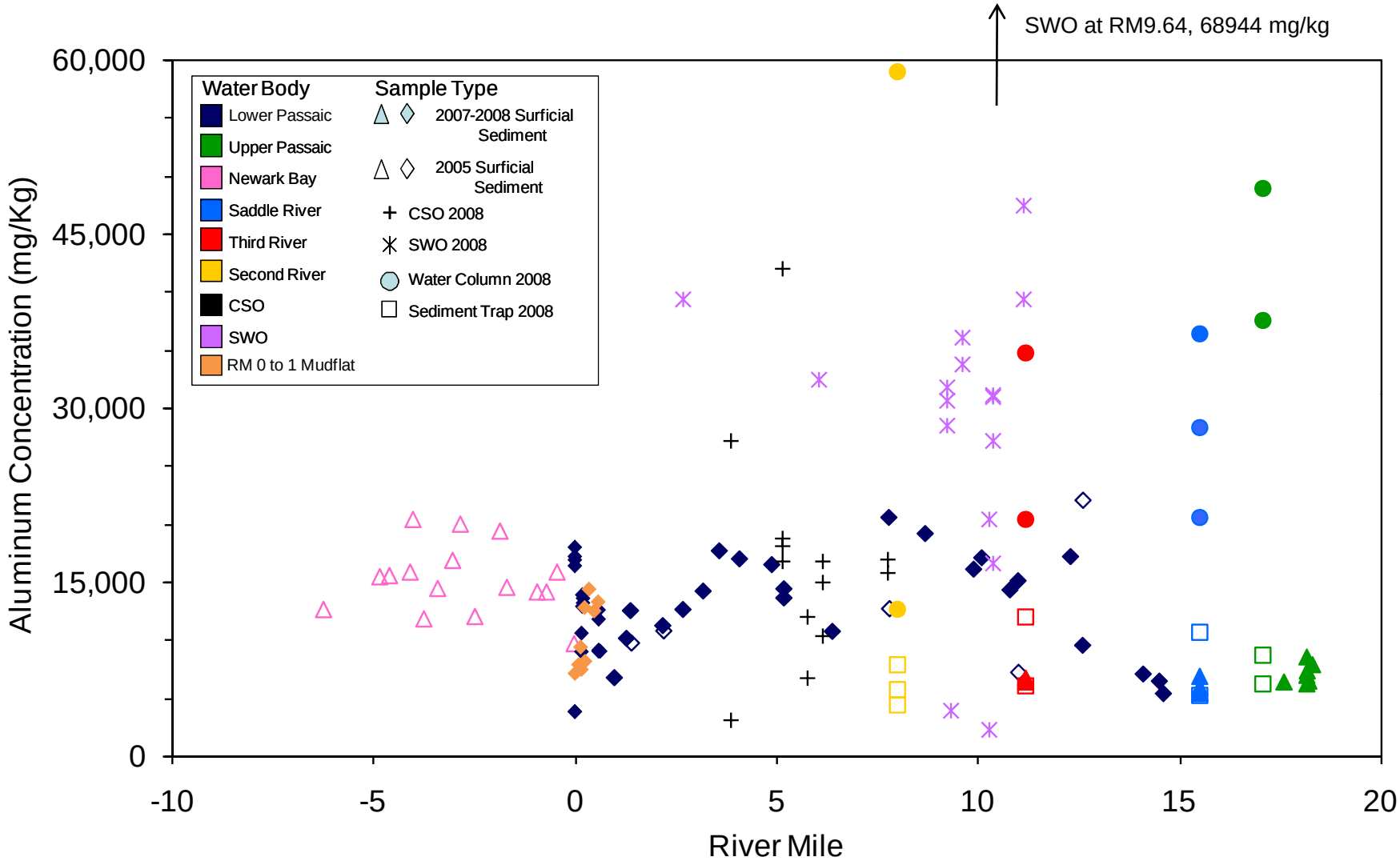
2009

Surface sediment and suspended solids (DP) are the same



1.4 Lower Passaic
UP Upper Passaic
-0.03 Newark Bay
SR Saddle River
2R Second River
3R Third River
CS CSO
SW SWO
DP USGS TOPS

	Surface Sediment and Suspended Solids Principal Components *Lower Passaic River Restoration Project*	Figure 14-9 2009

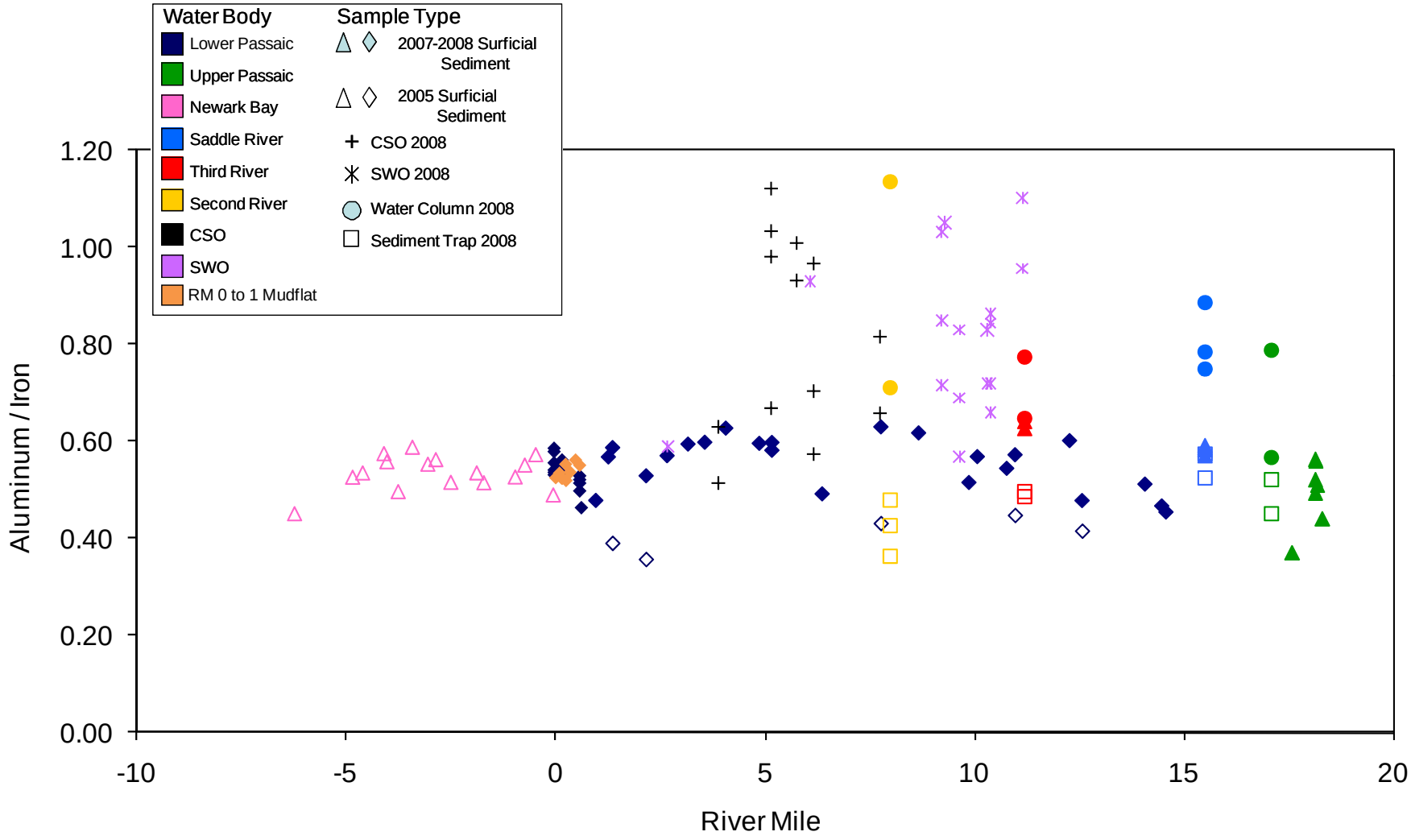


Aluminum Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-10a

2009

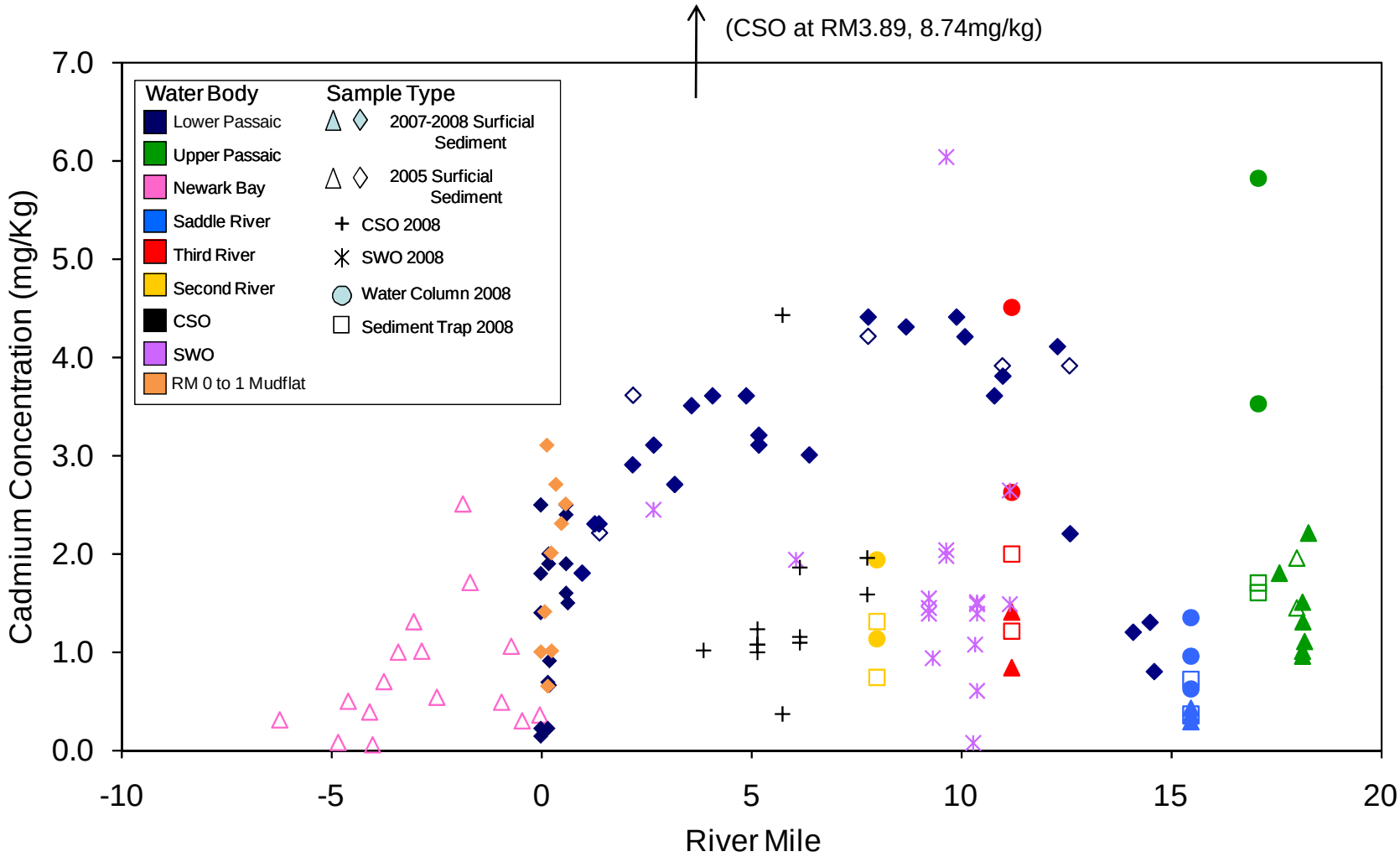


Aluminum / Iron Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-10b

2009

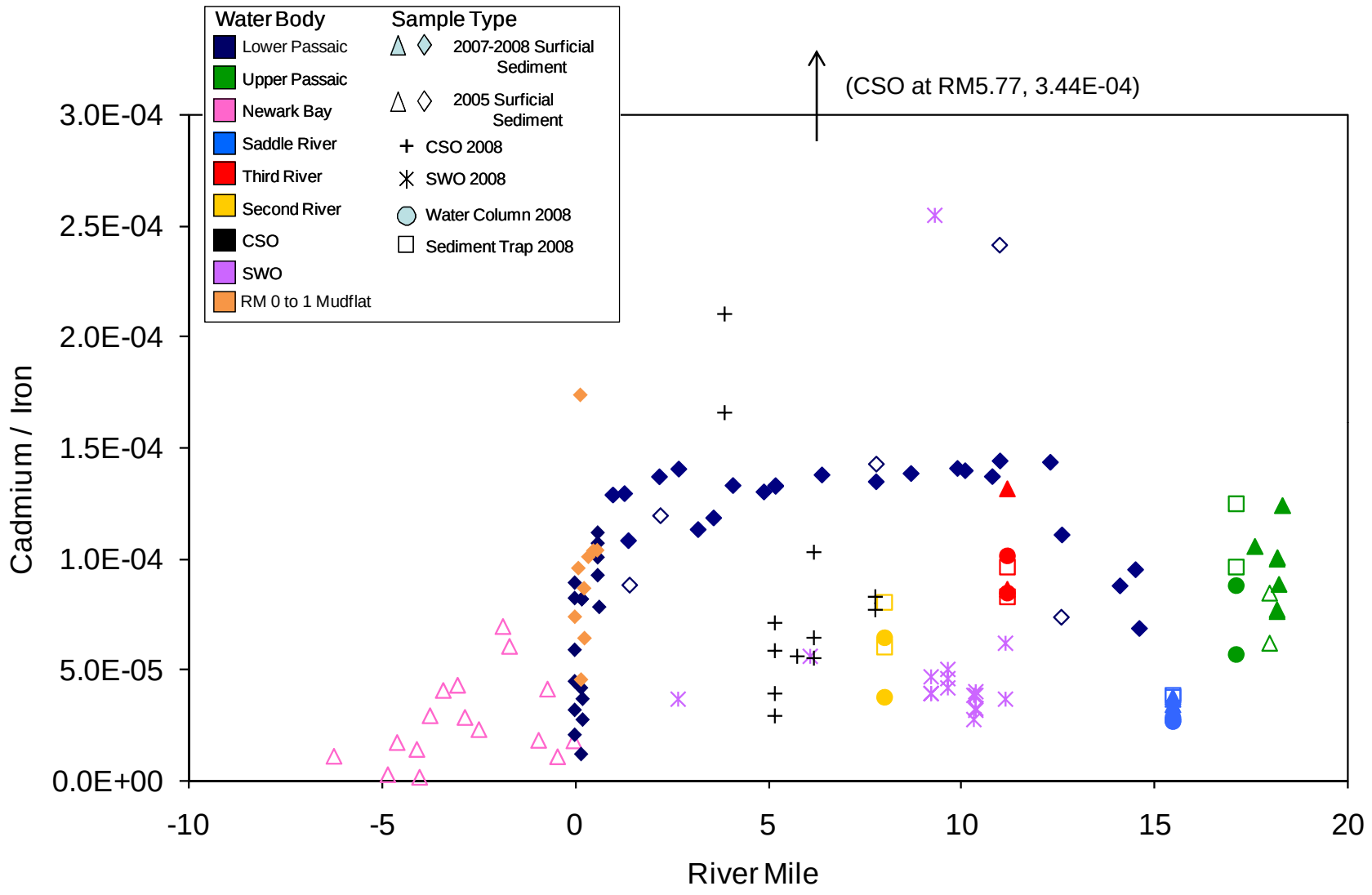


Cadmium Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-10c

2009



Cadmium / Iron Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-10d

2009

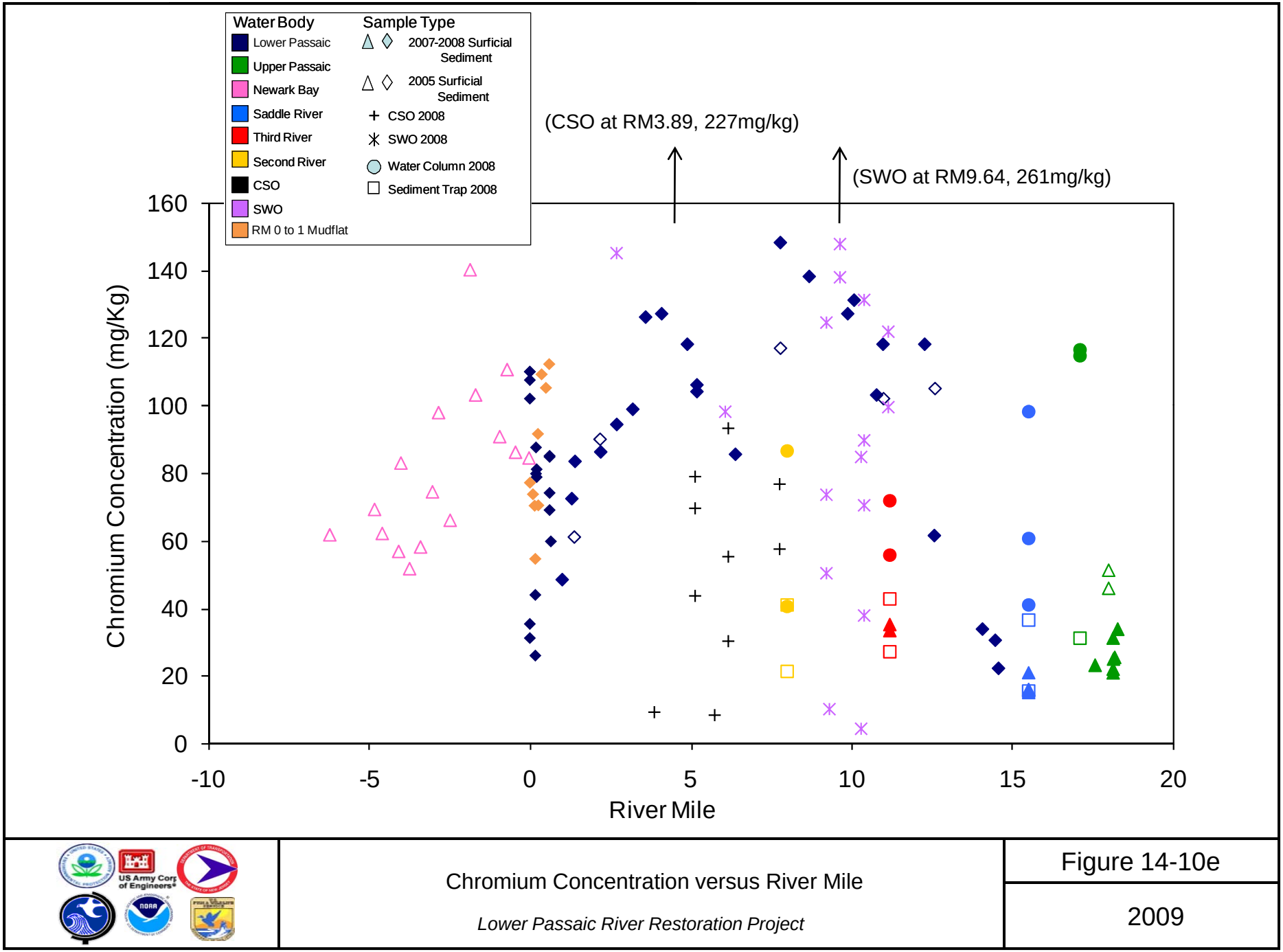
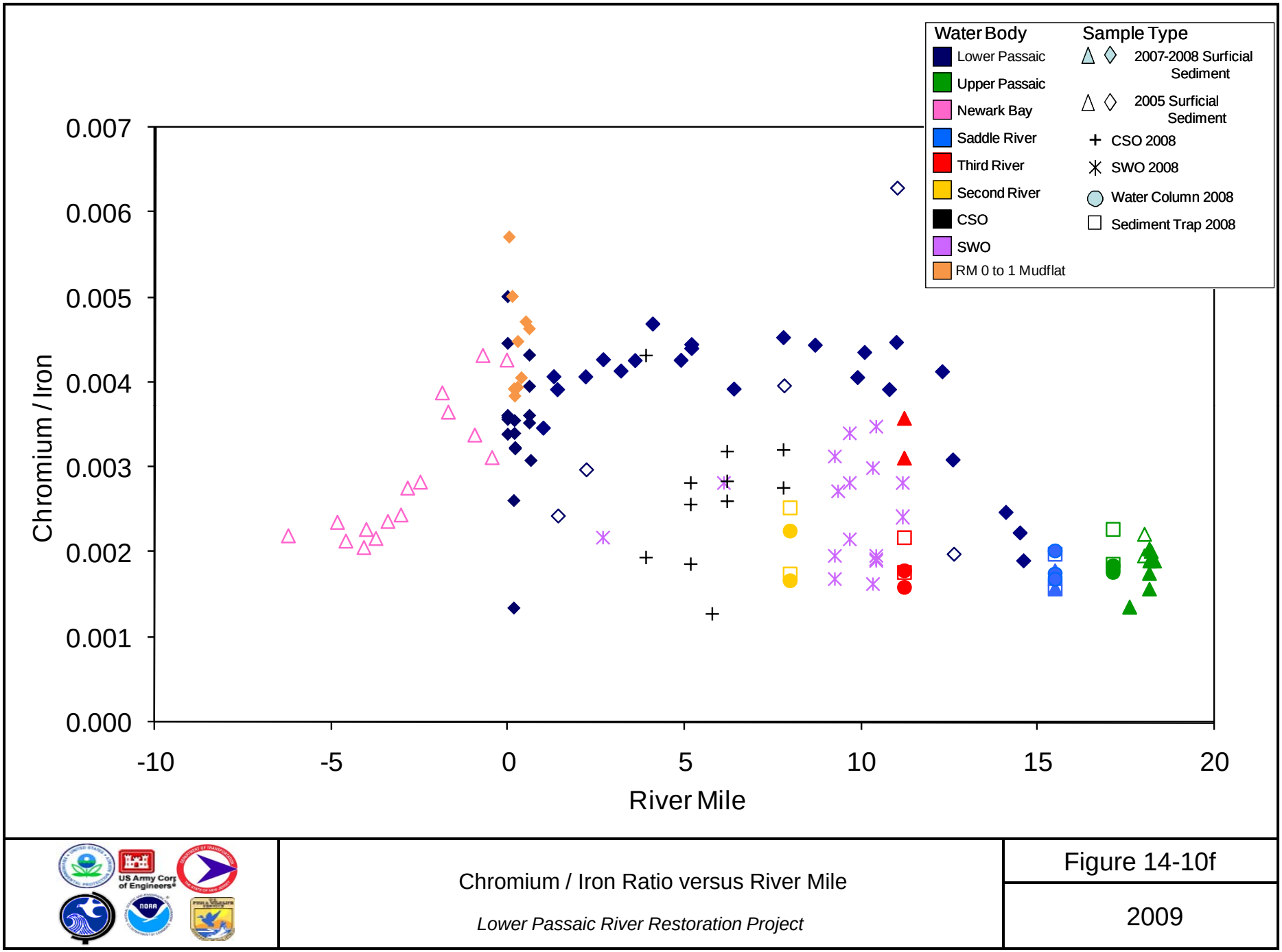


Figure 14-10e

Chromium Concentration versus River Mile

Lower Passaic River Restoration Project

2009

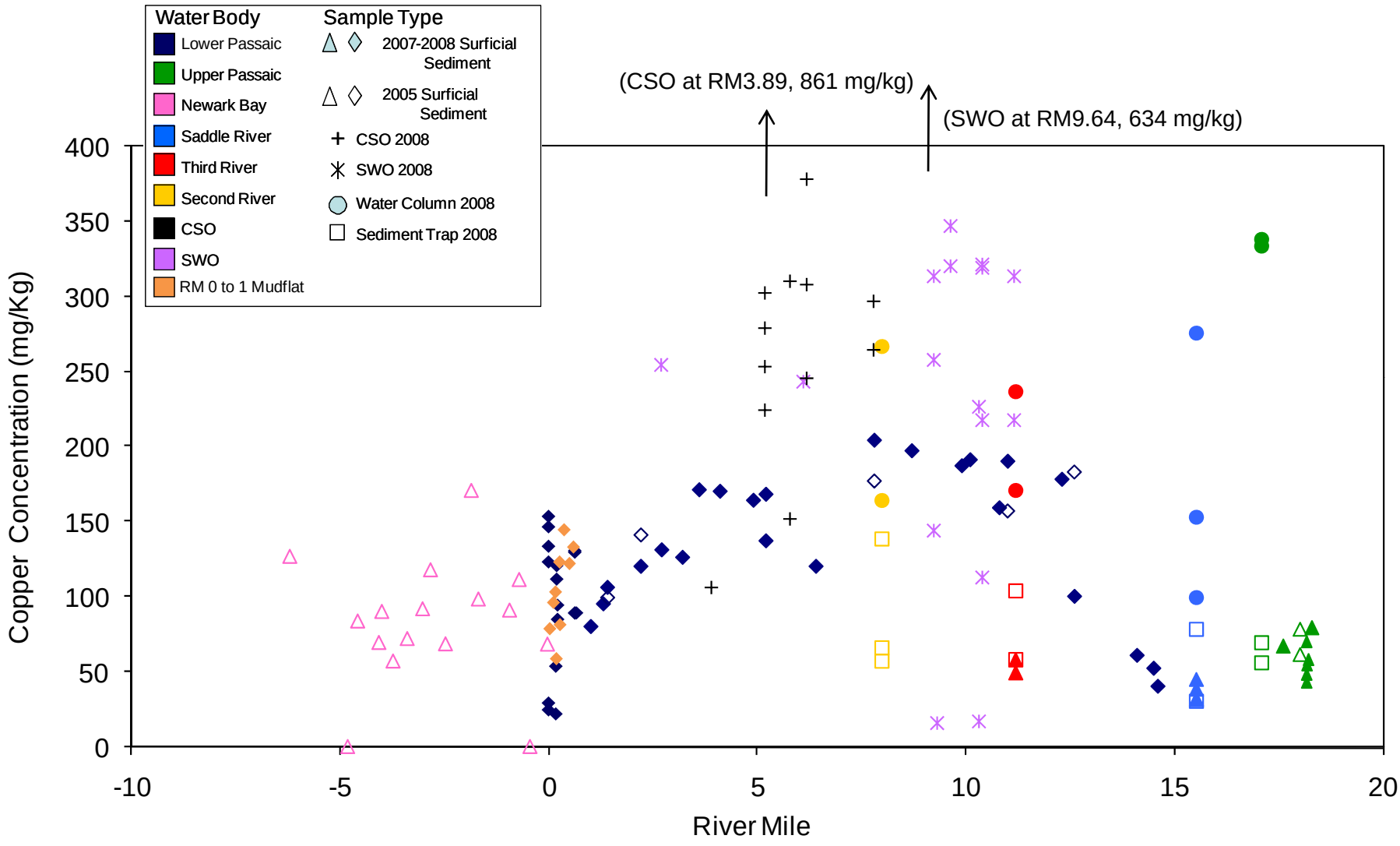


Chromium / Iron Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-10f

2009

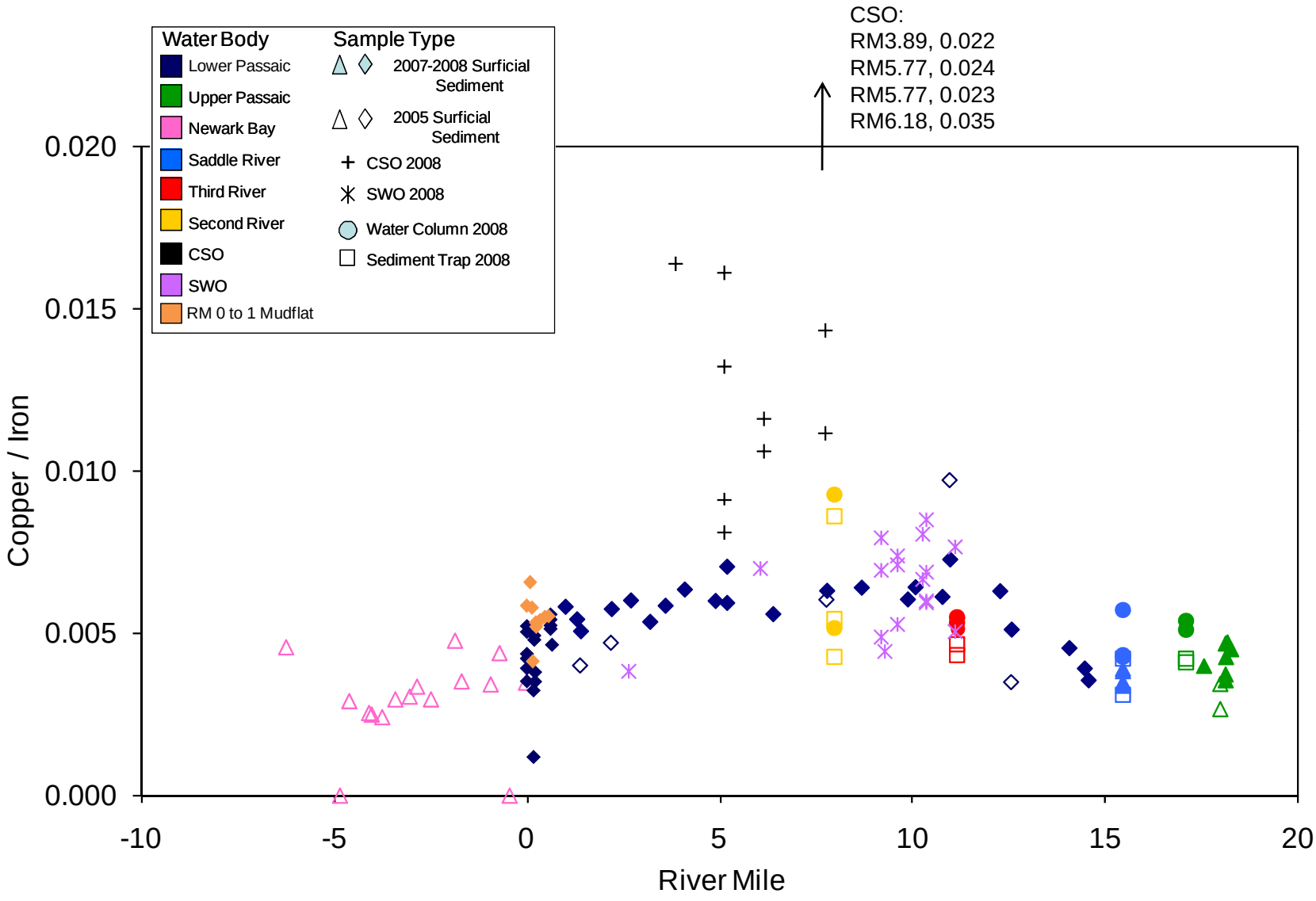


Copper Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-10g

2009

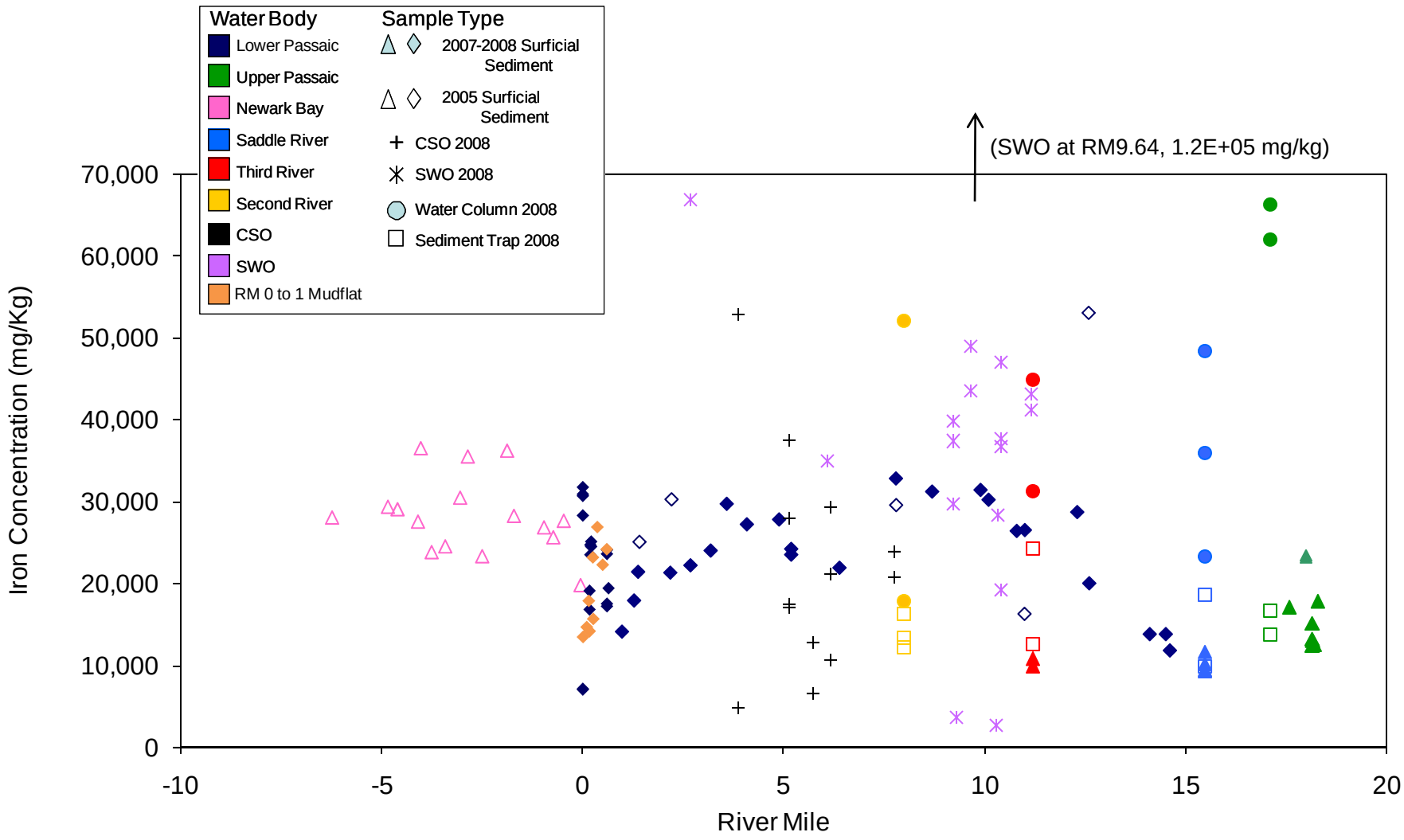


Copper / Iron Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-10h

2009

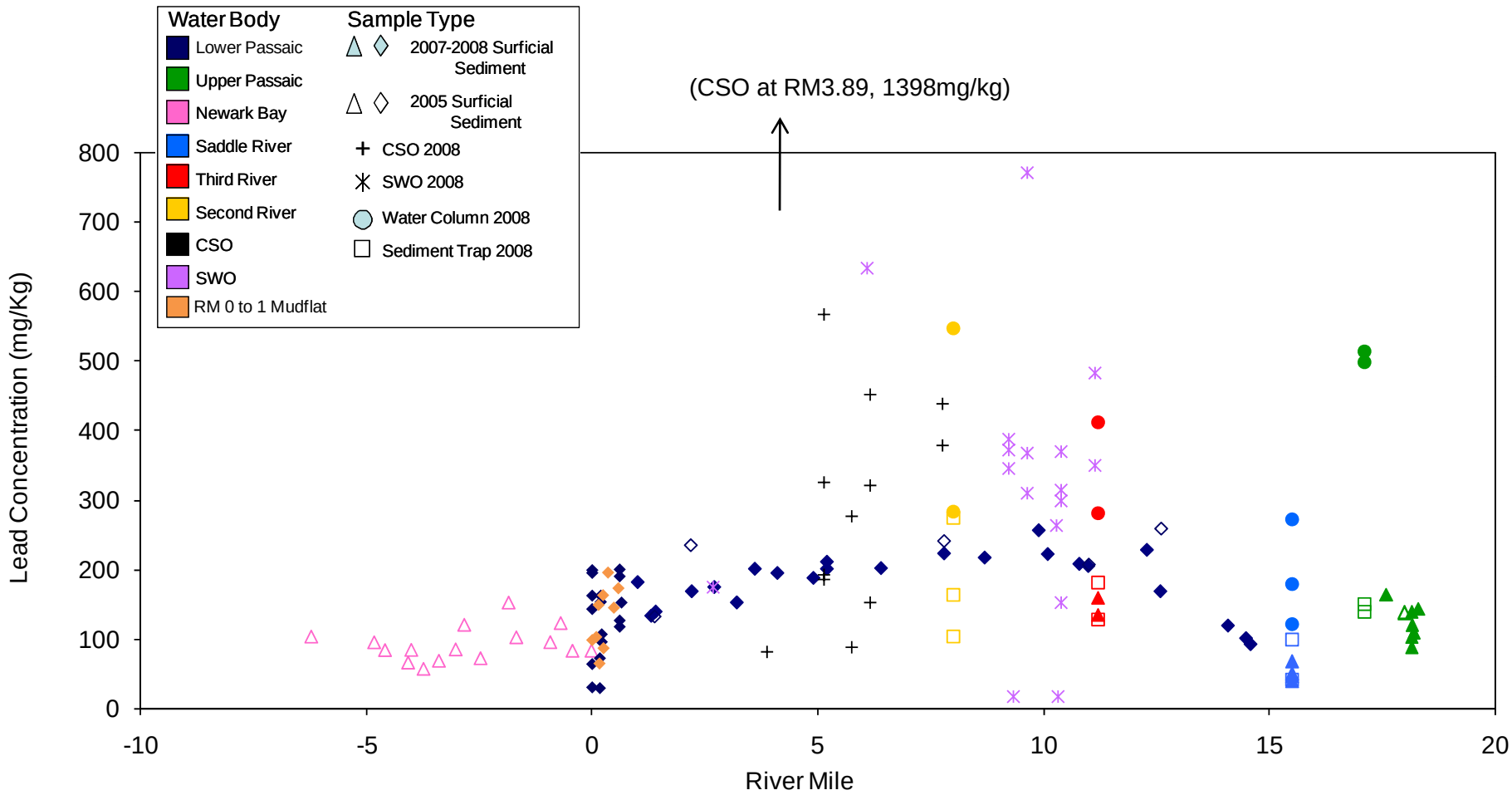


Iron Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-10i

2009

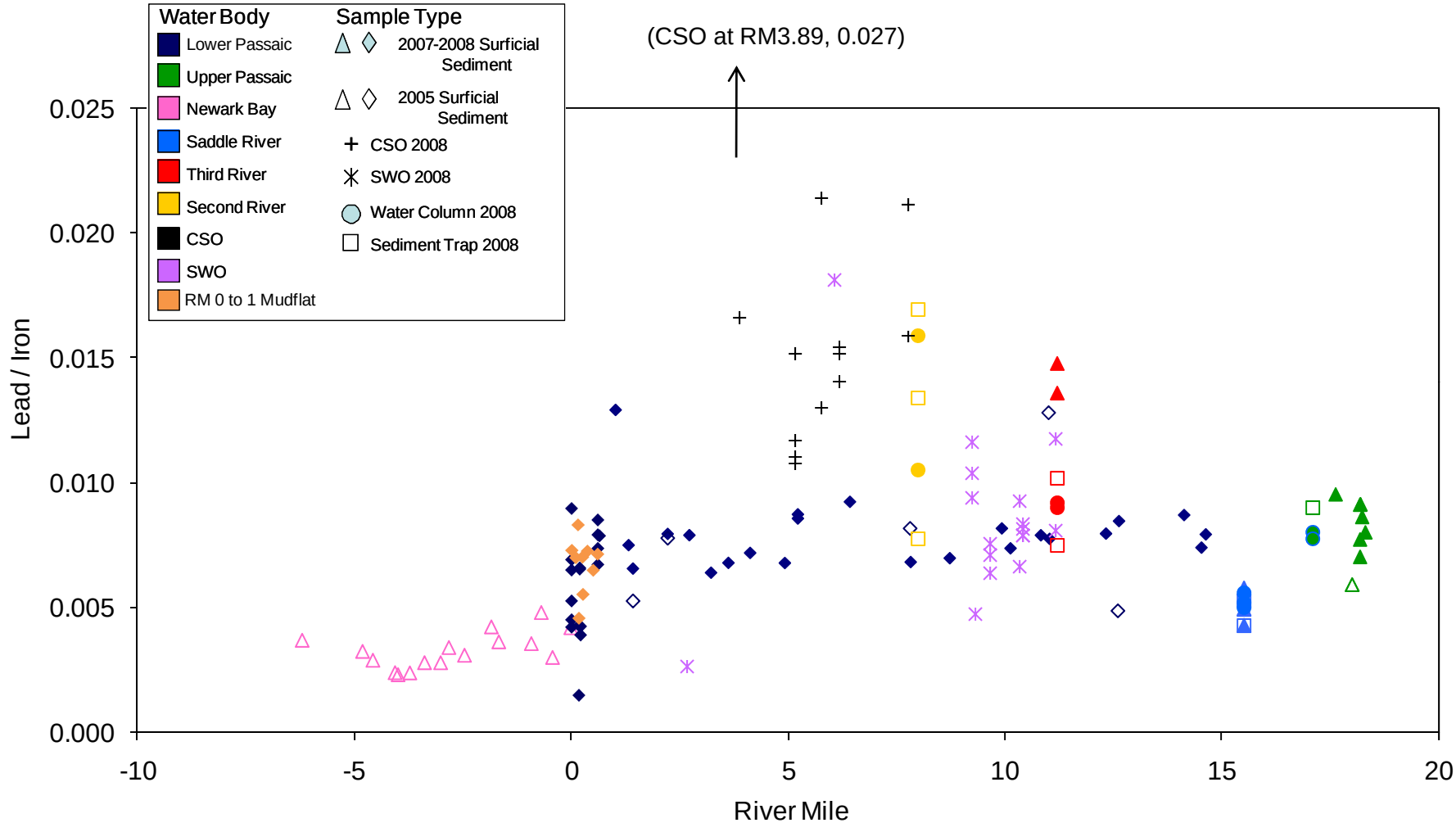


Lead Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-10j

2009

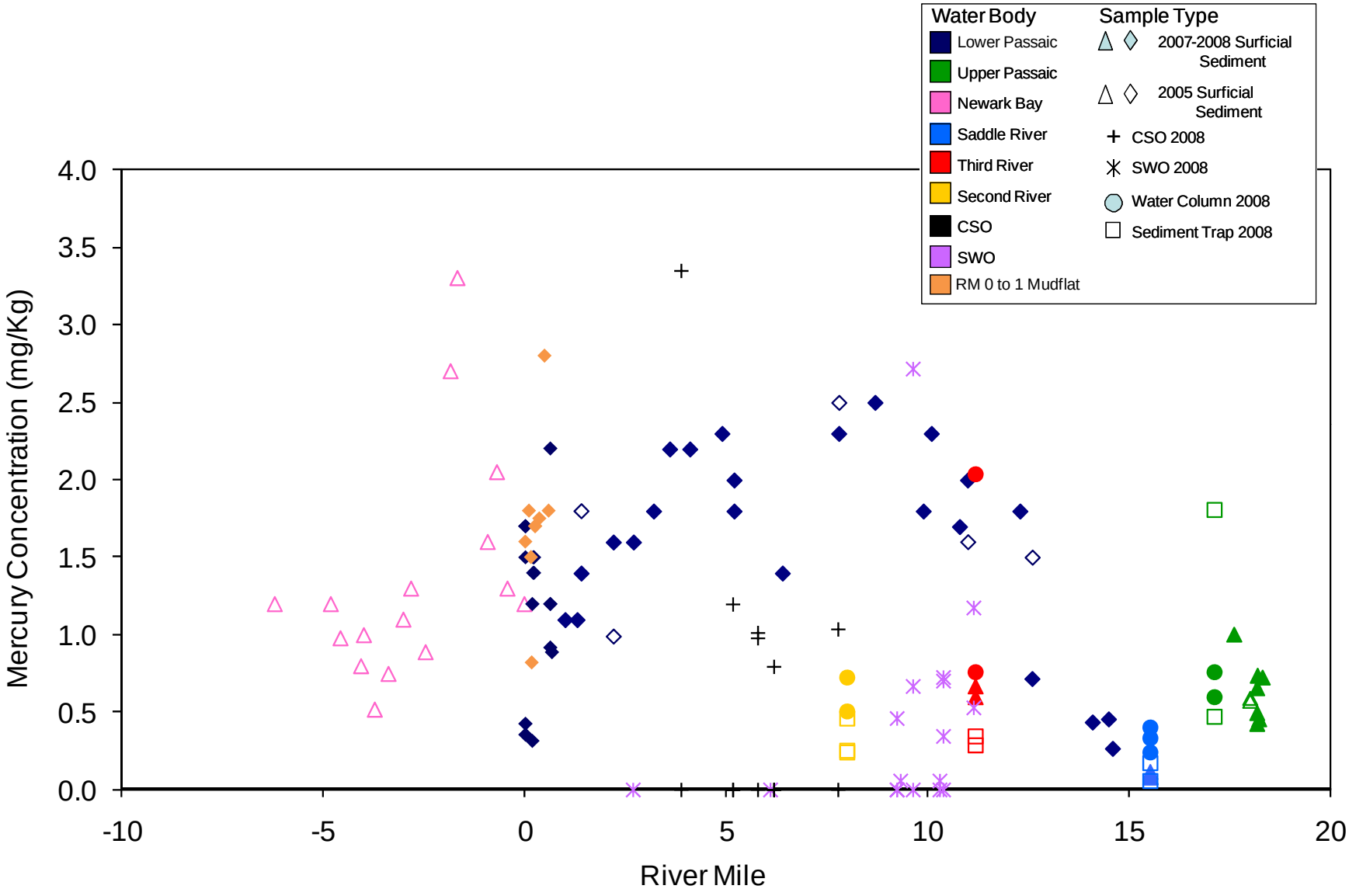


Lead / Iron Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-10k

2009

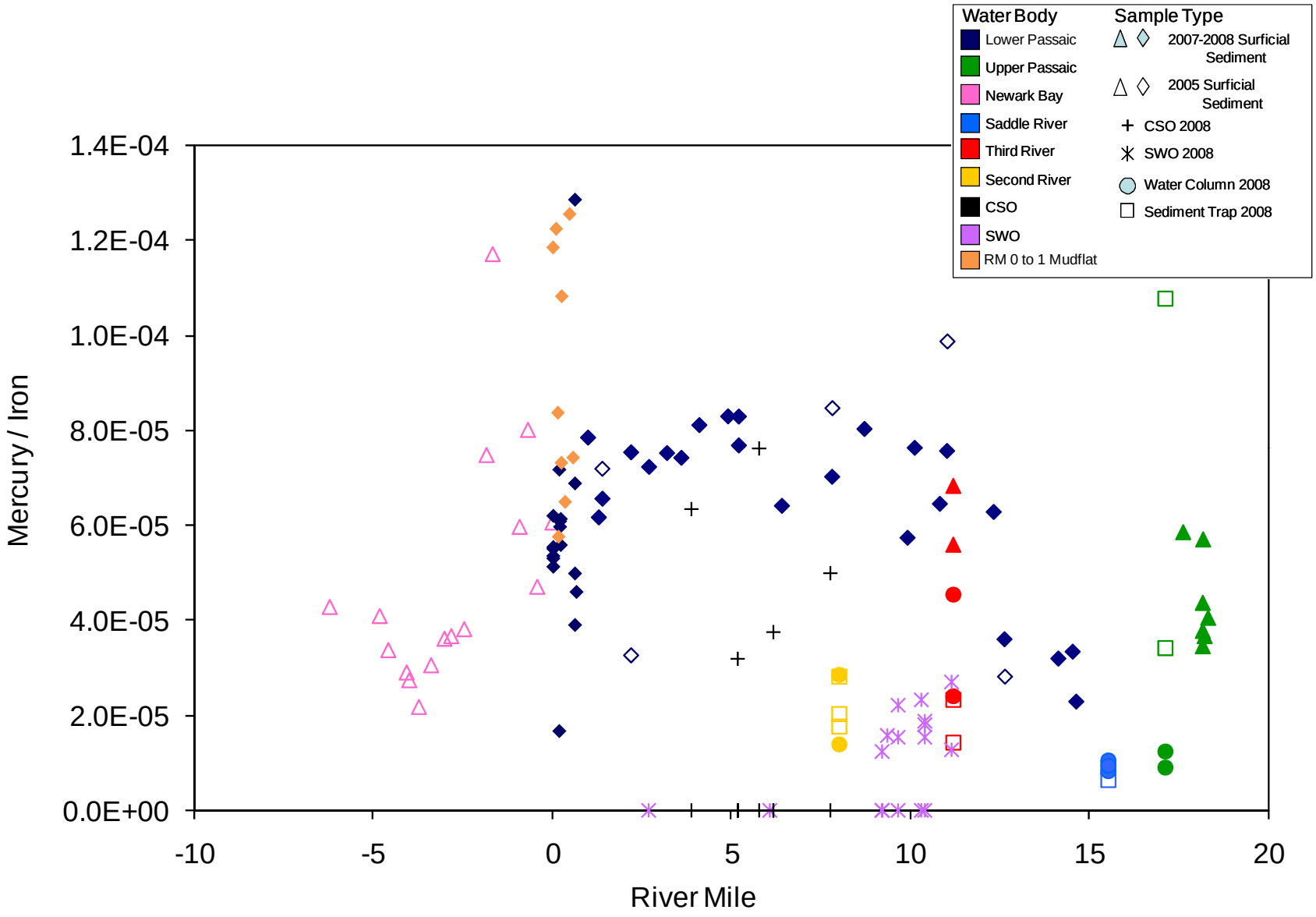


Mercury Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-10l

2009

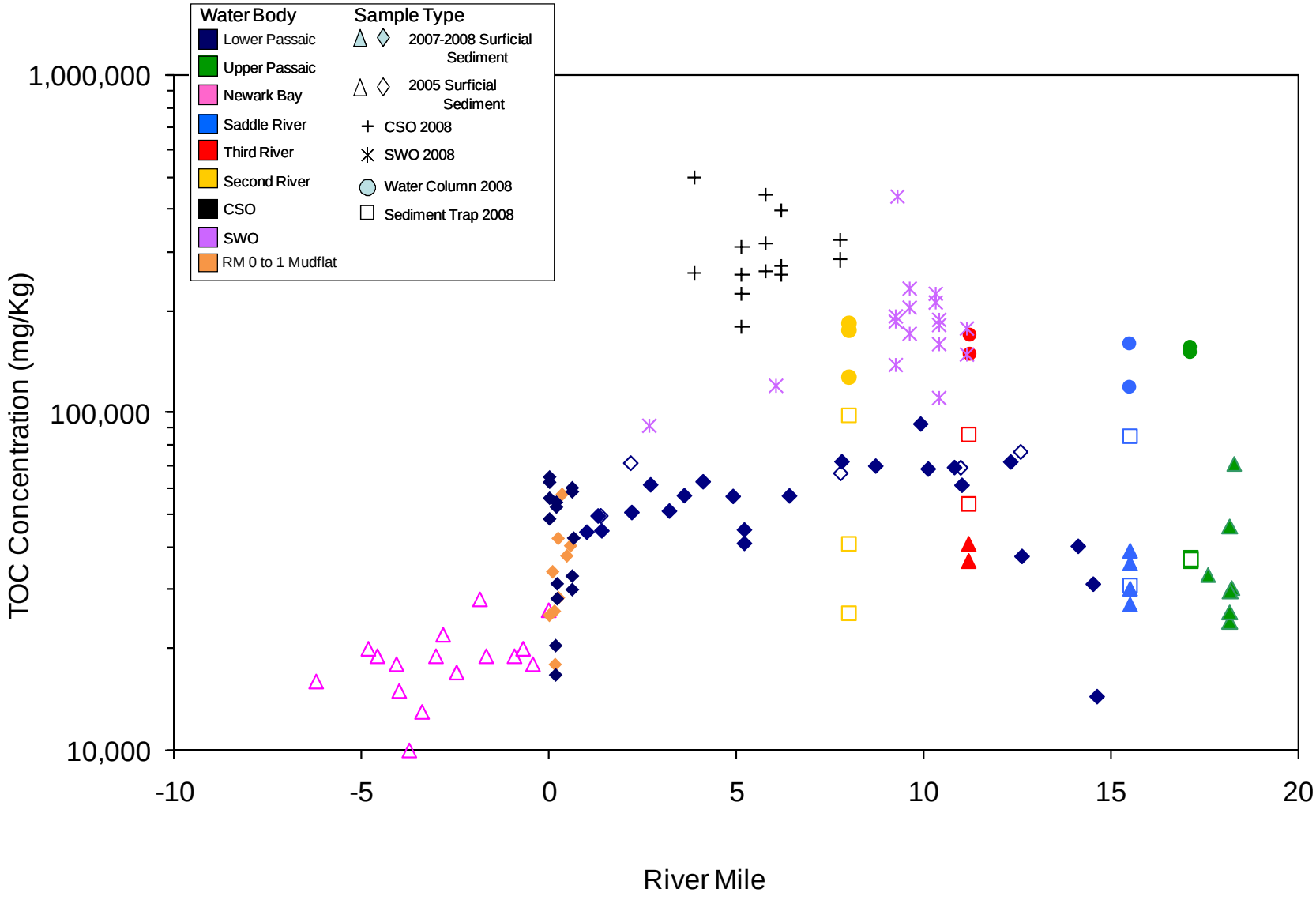


Mercury / Iron Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-10m

2009

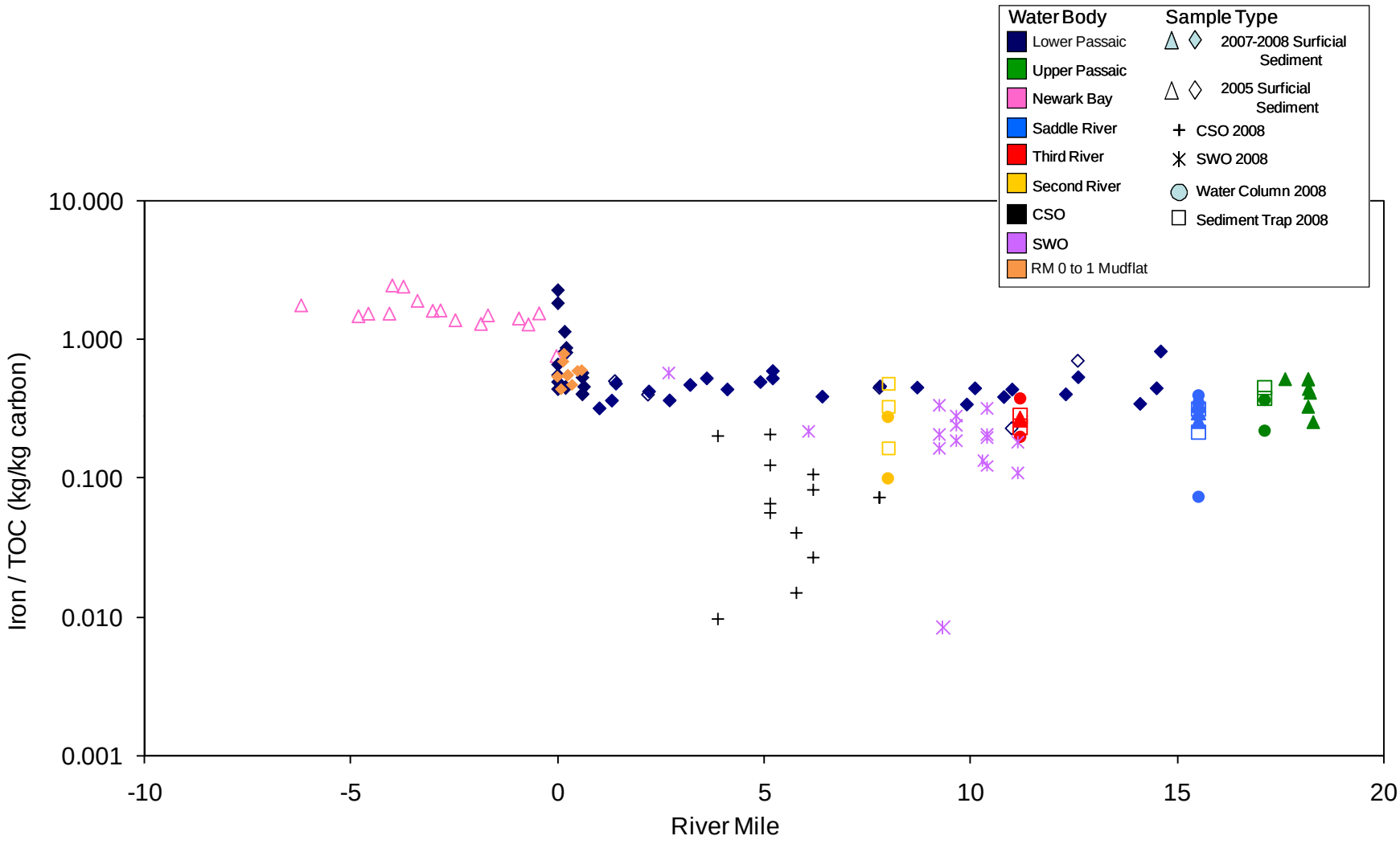


TOC versus River Mile

Lower Passaic River Restoration Project

Figure 14-11a

2009

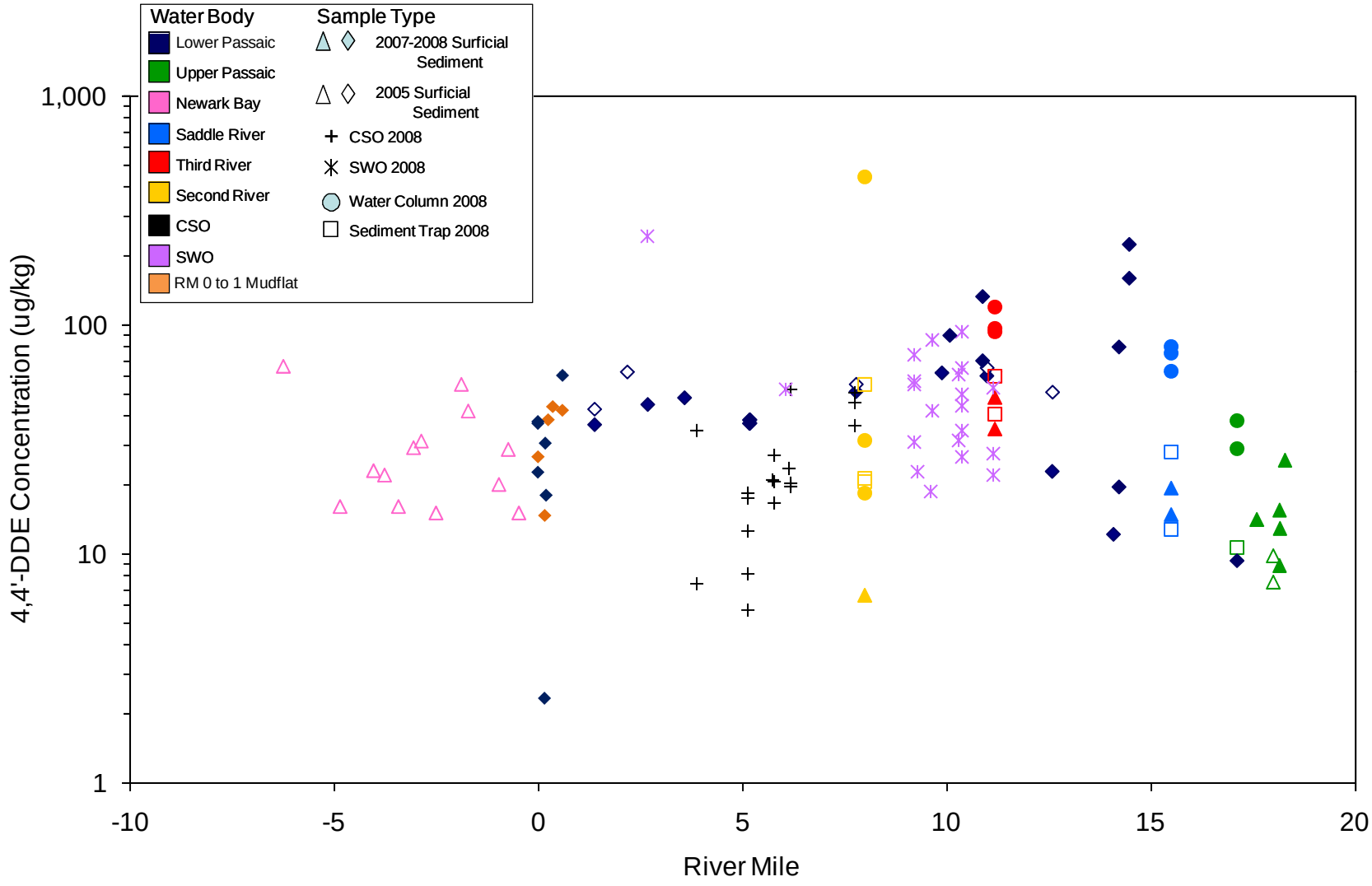


Iron / TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-11b

2009

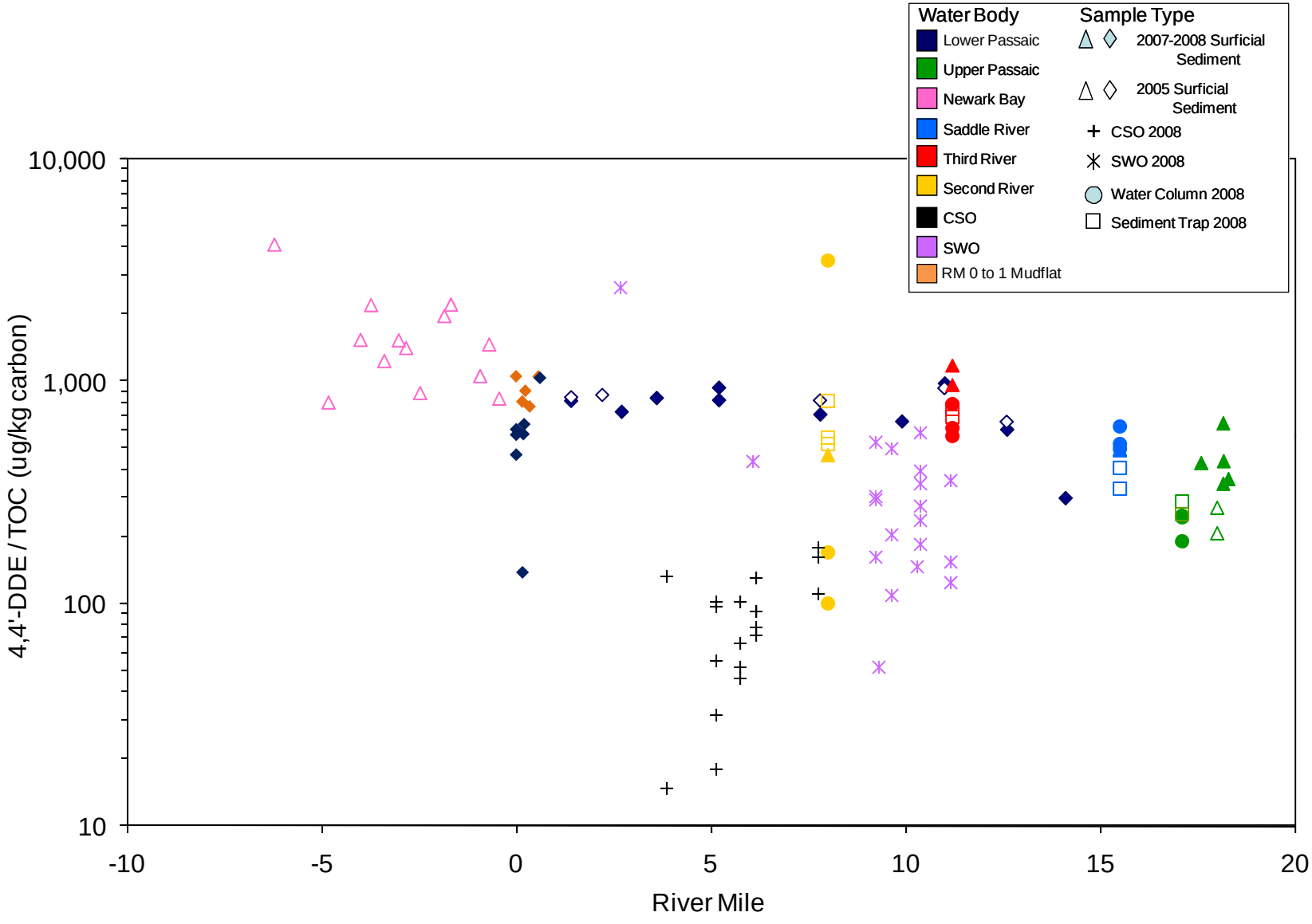


4,4'-DDE Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-12a

2009

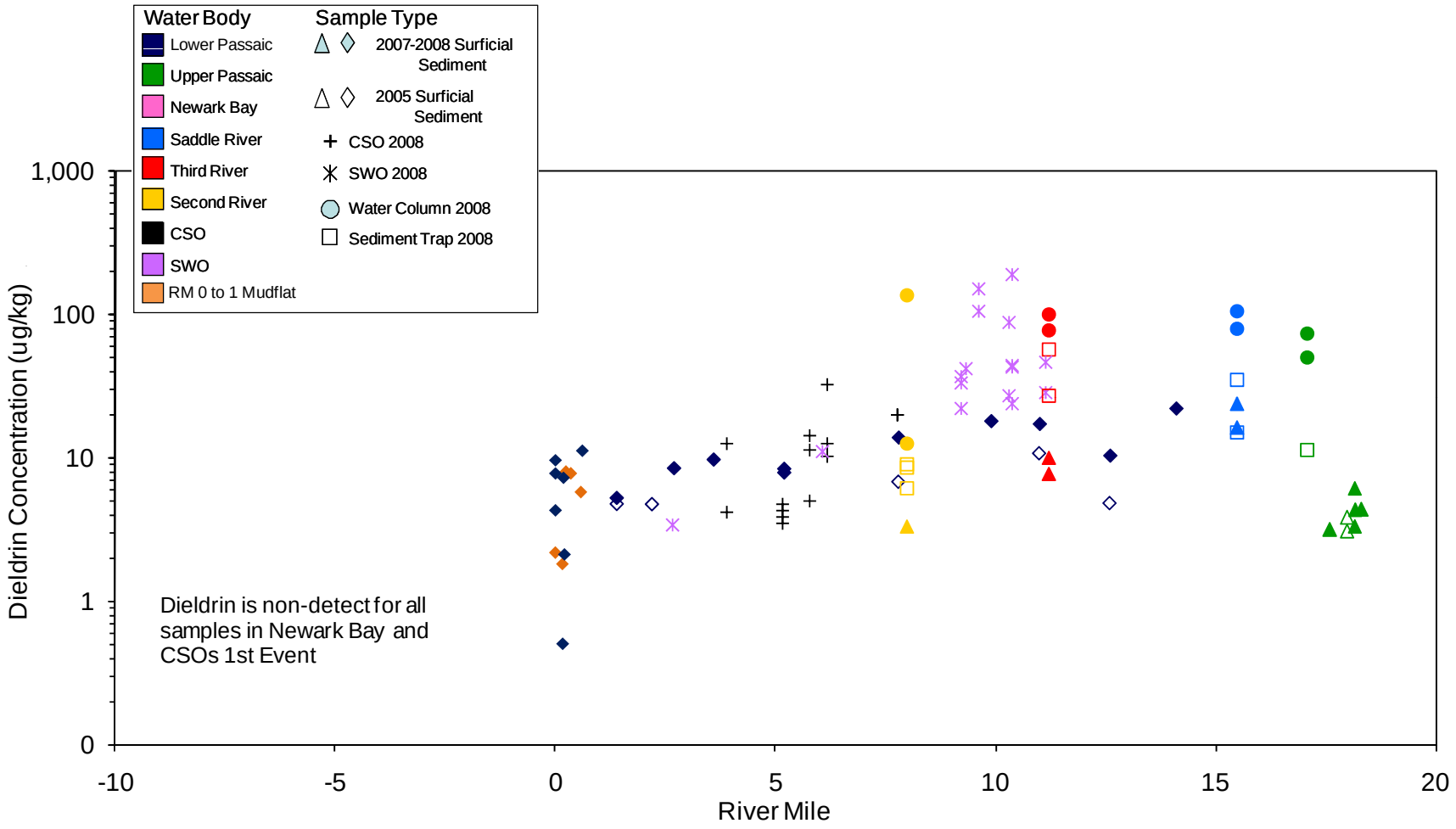


4,4'-DDE / TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-12b

2009

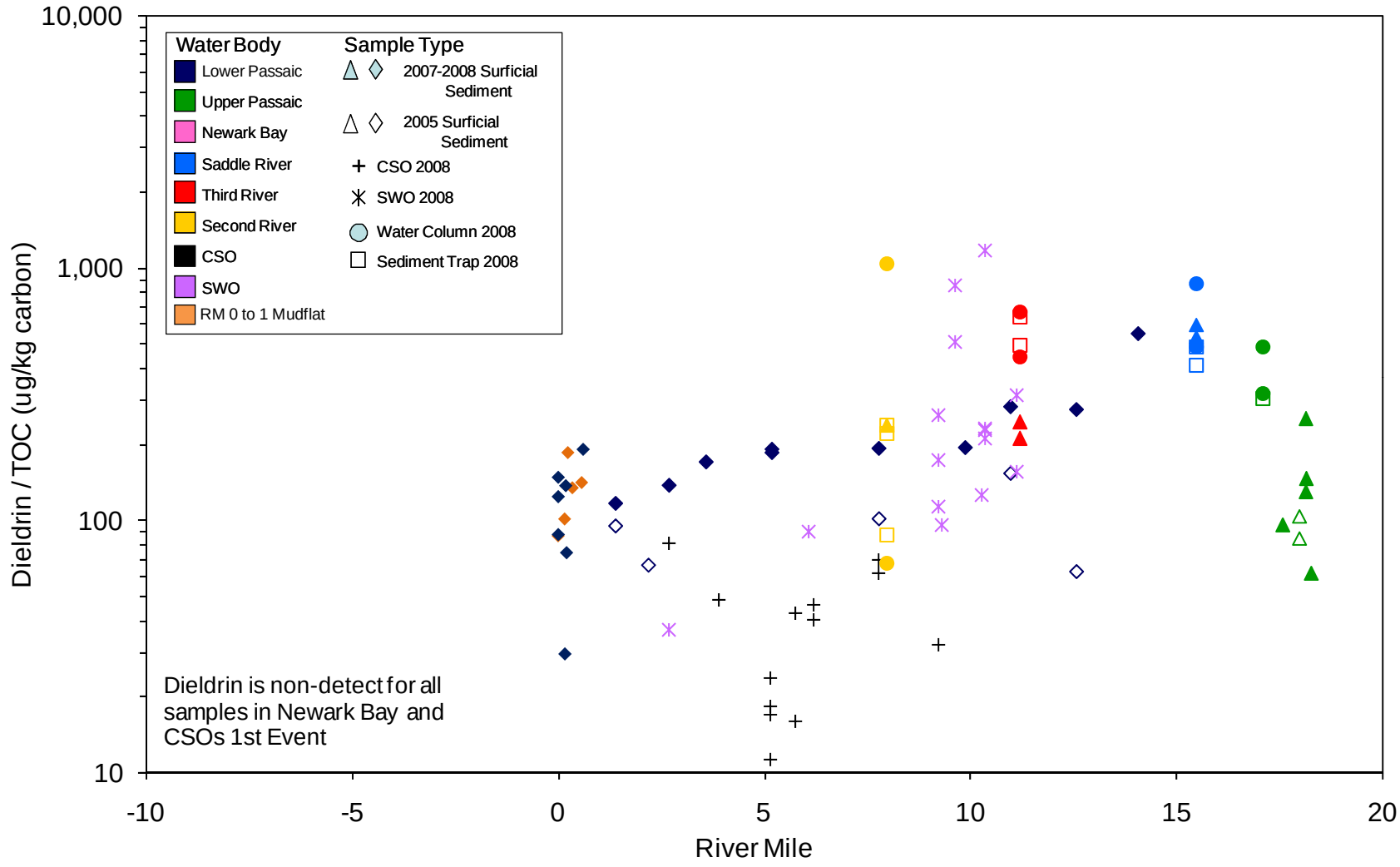


Dieldrin Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-12c

2009

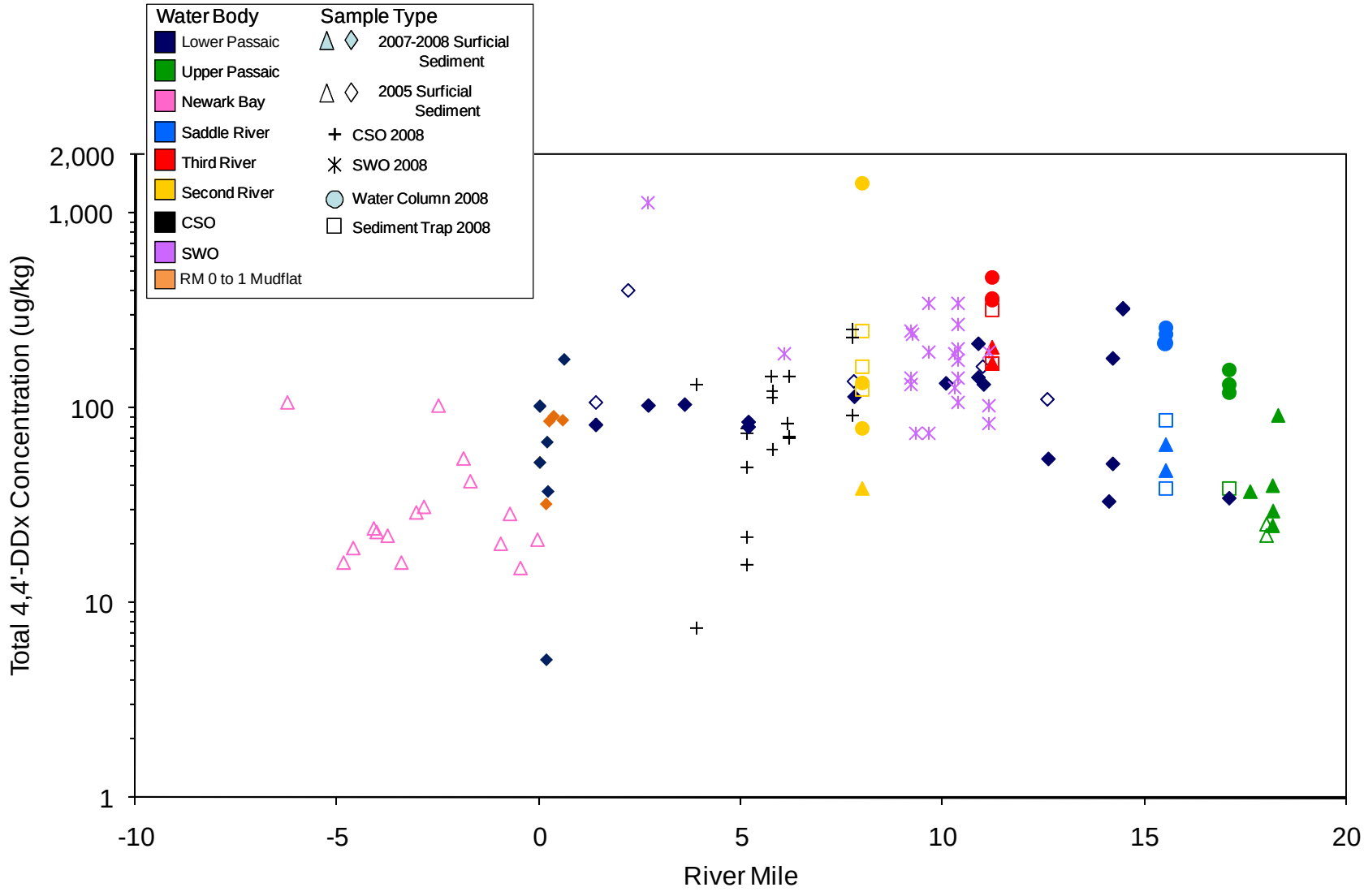


Dieldrin / TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-12d

2009

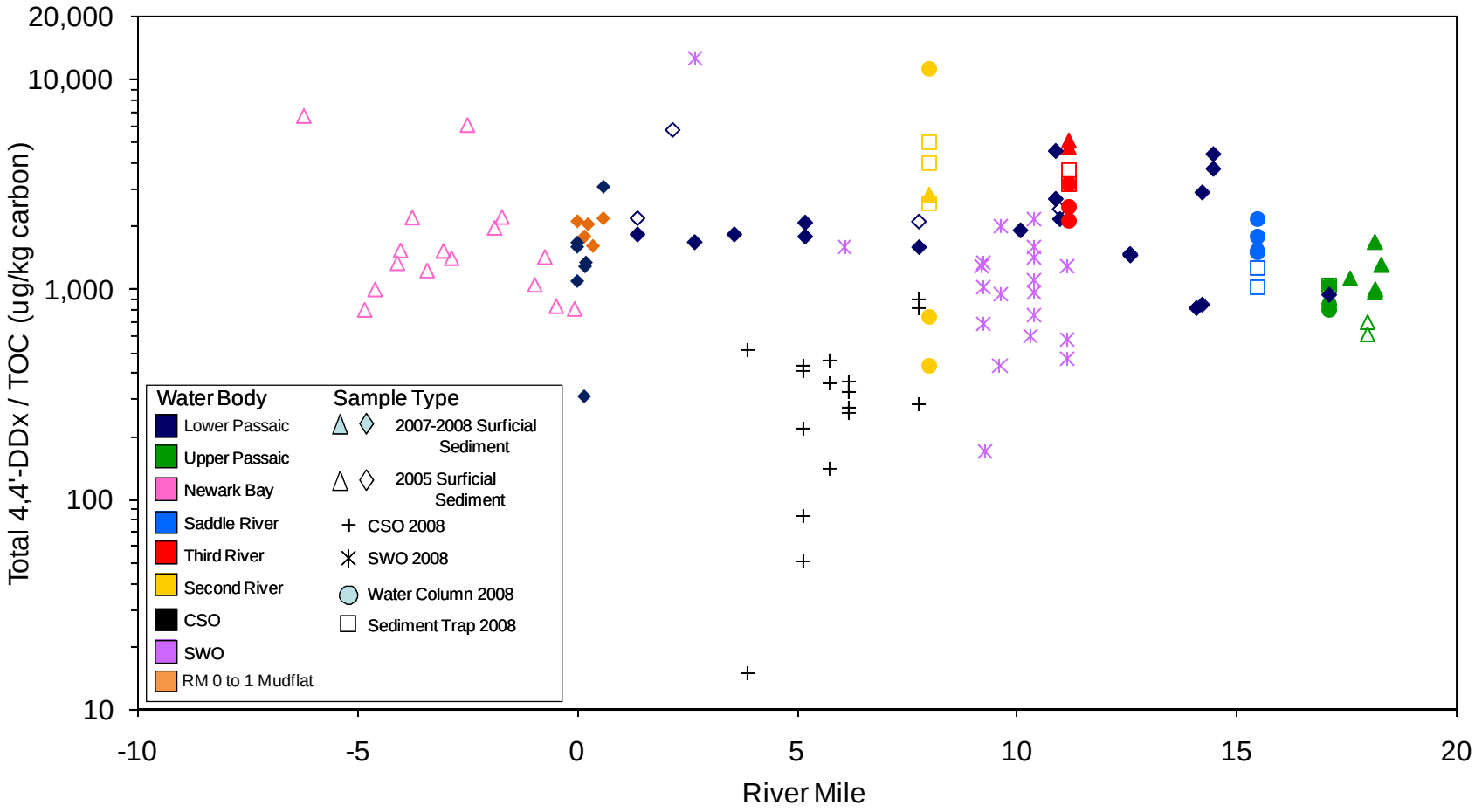


Total 4,4'-DDx Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-12e

2009

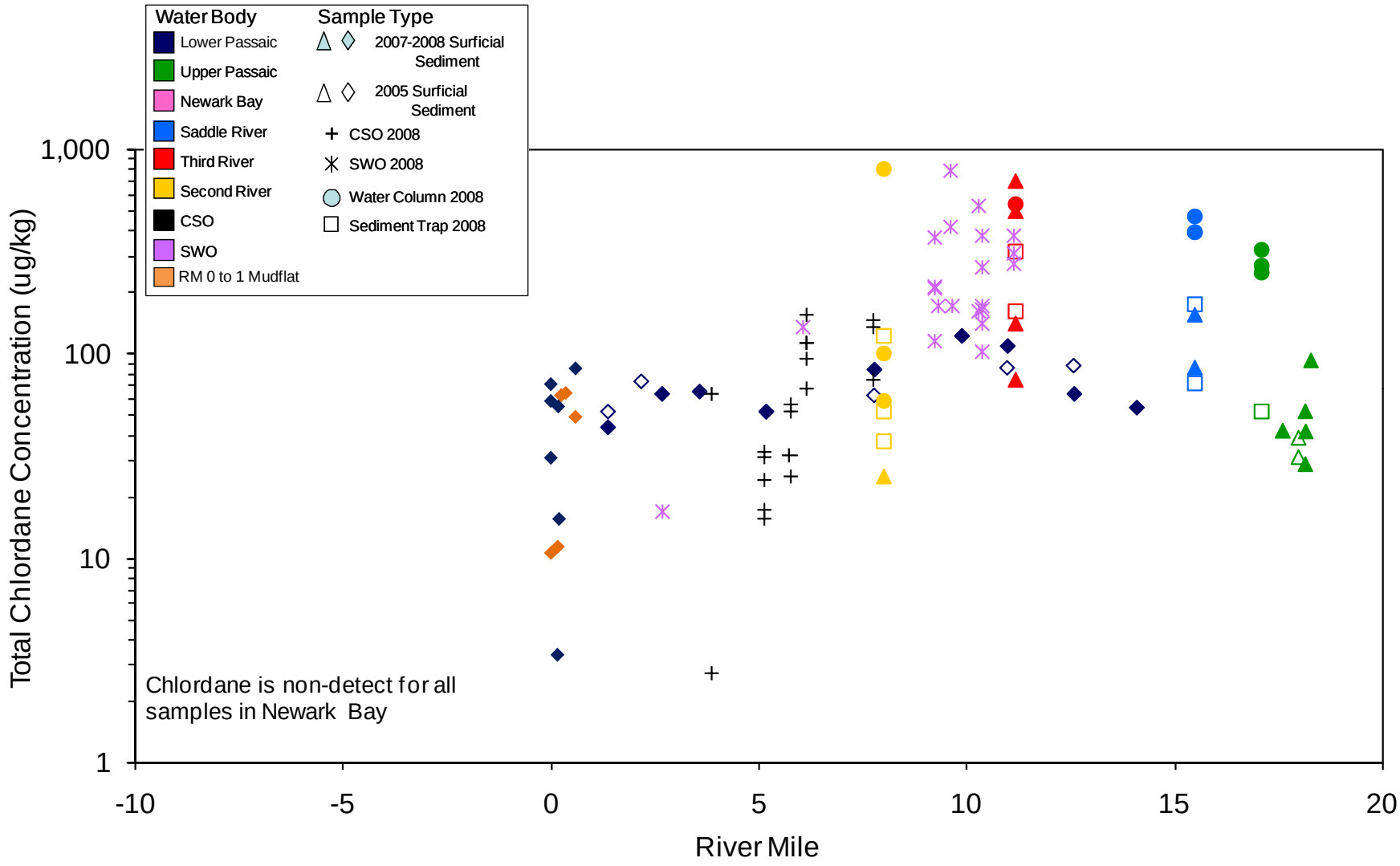


Total 4,4'-DDx / TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-12f

2009

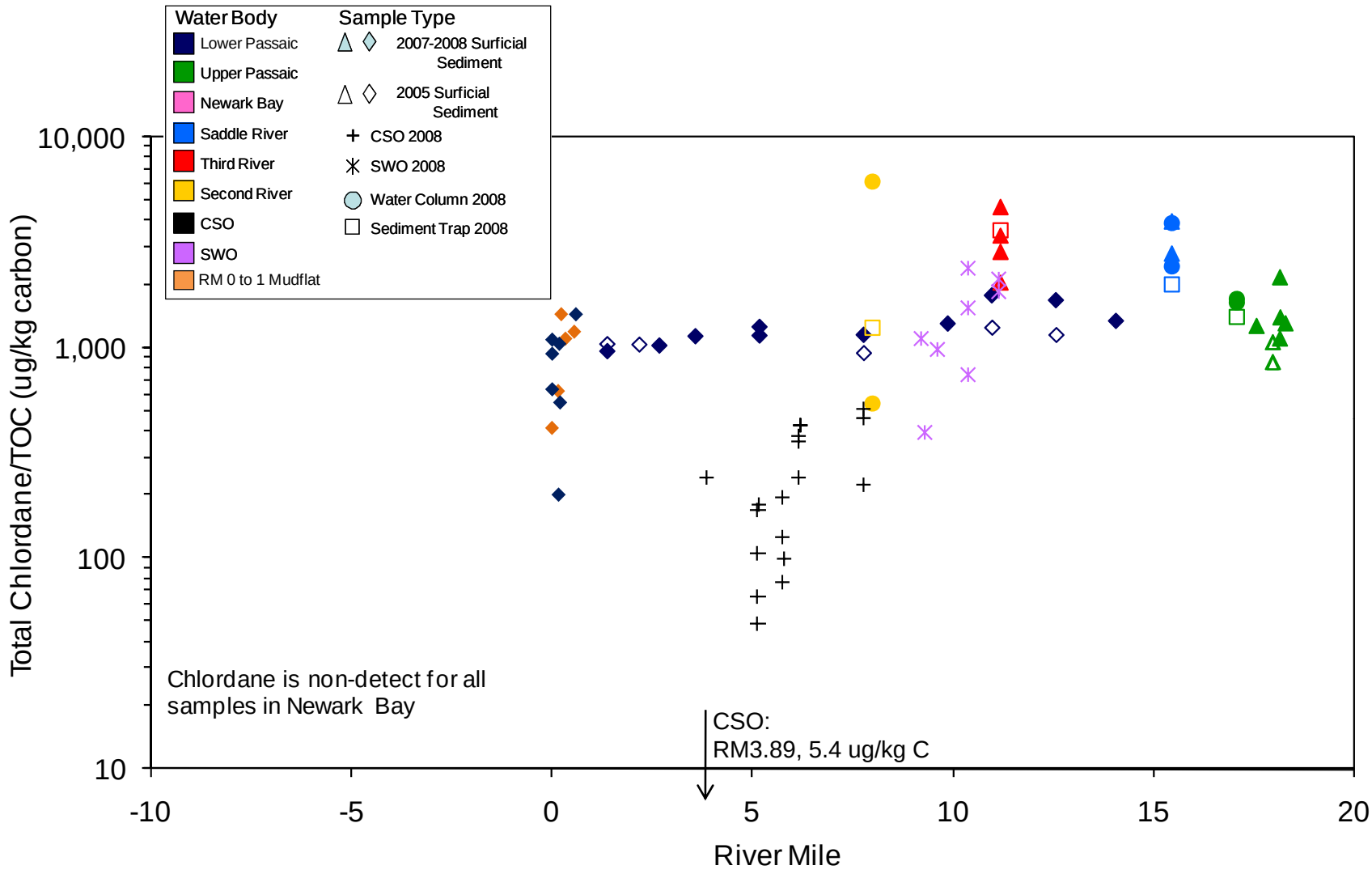


Total Chlordane Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-12g

2009

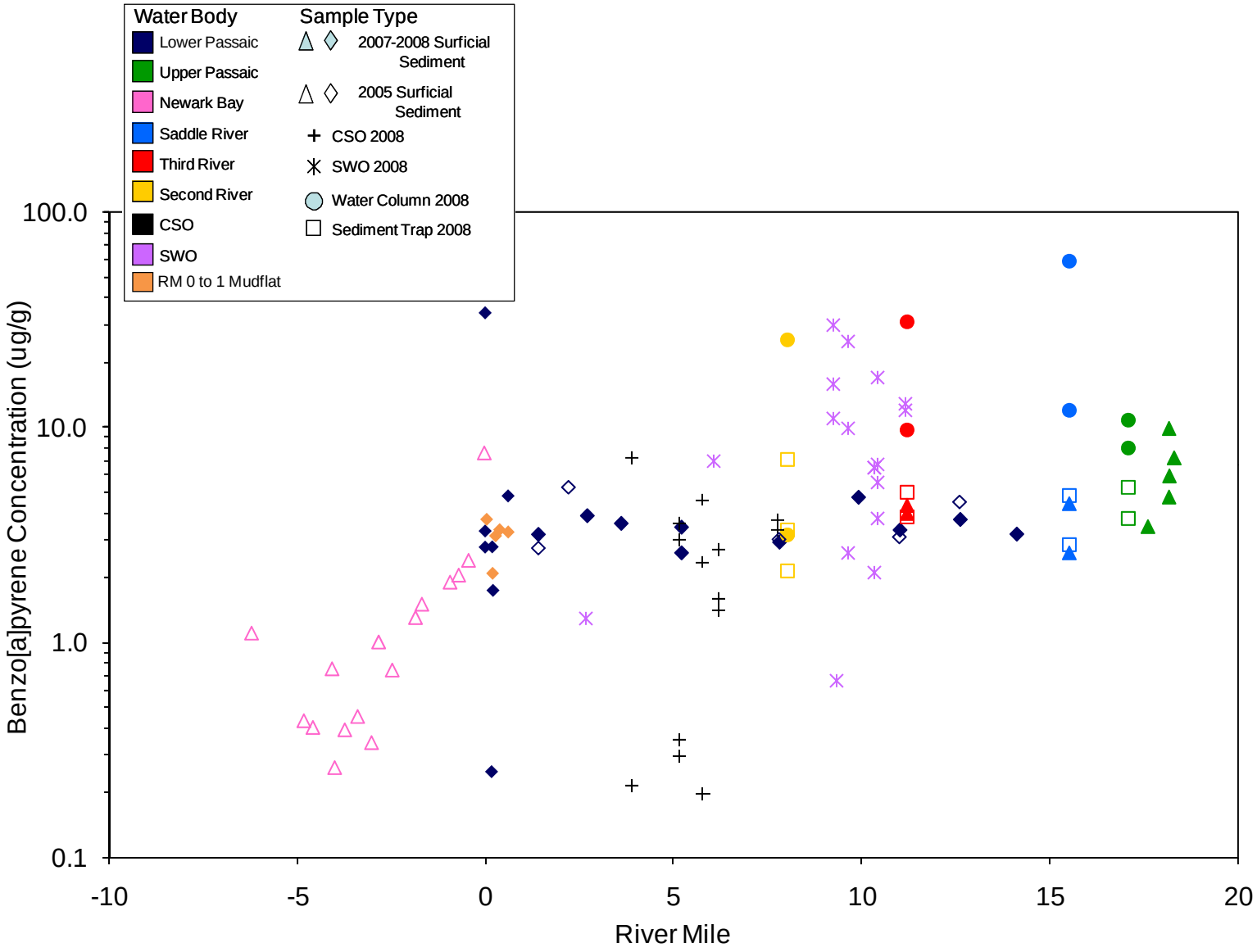


Total Chlordane/TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-12h

2009

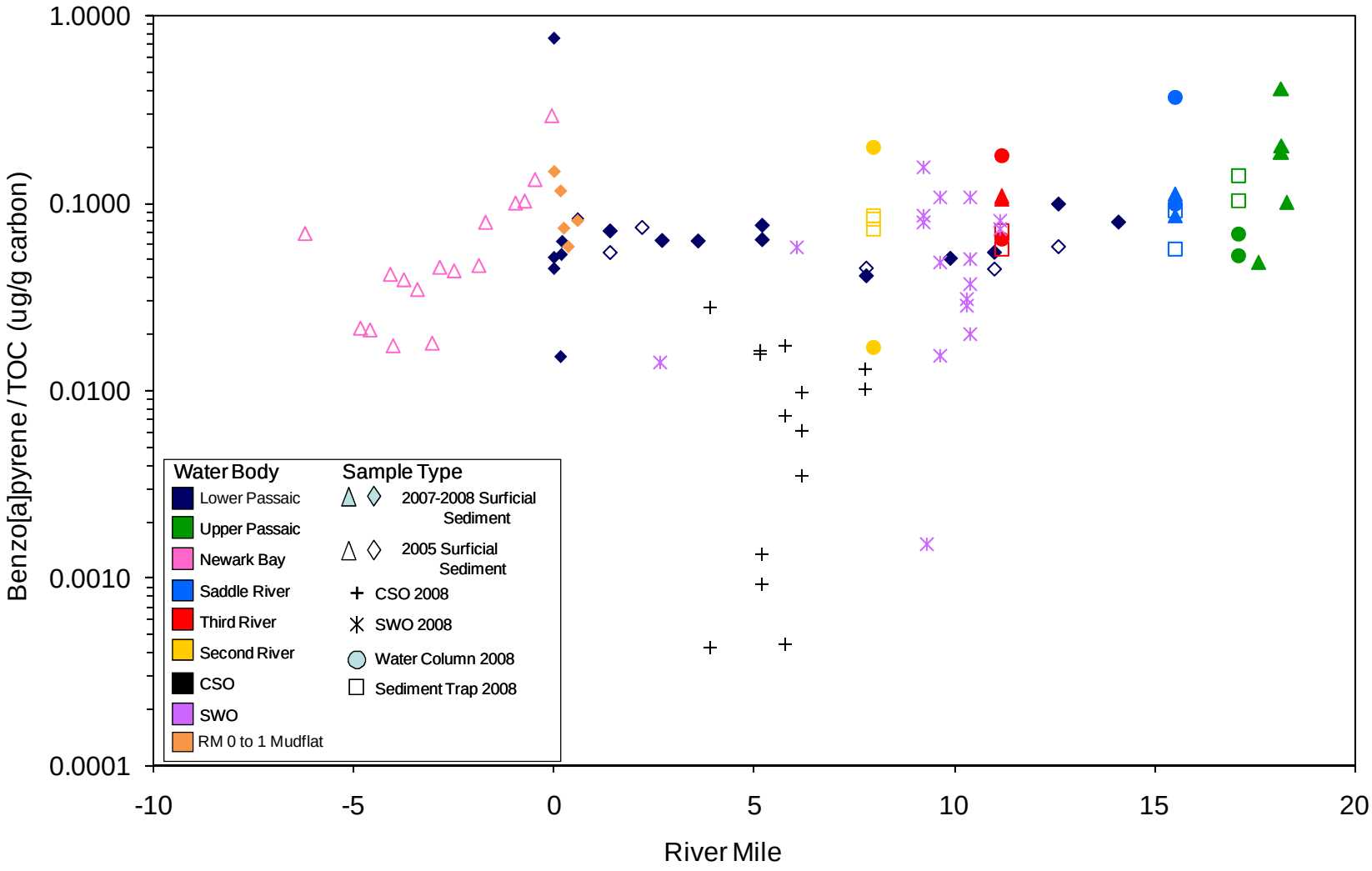


Benzo[a]pyrene Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-13a

2009

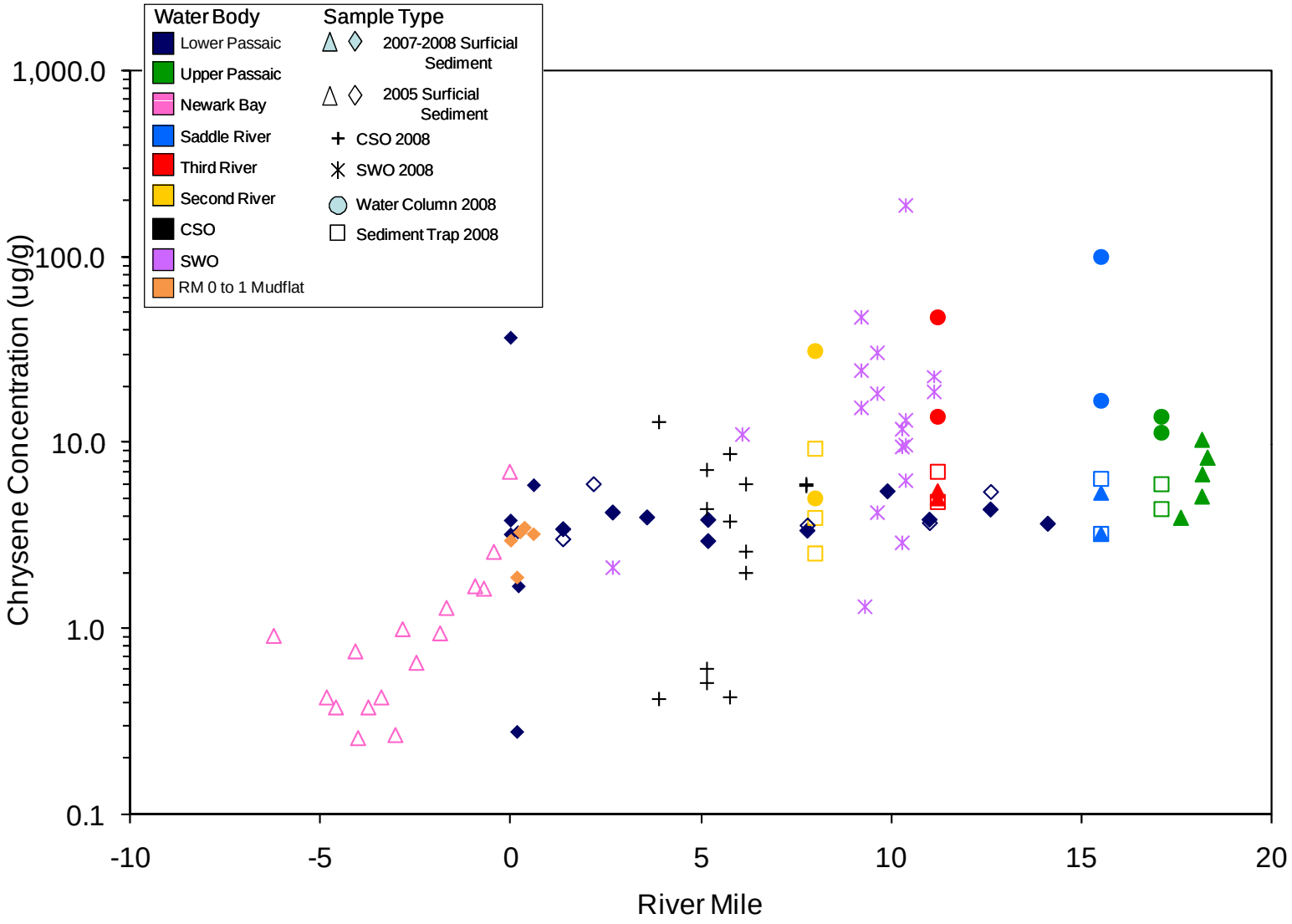


Benzo[a]pyrene / TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-13b

2009

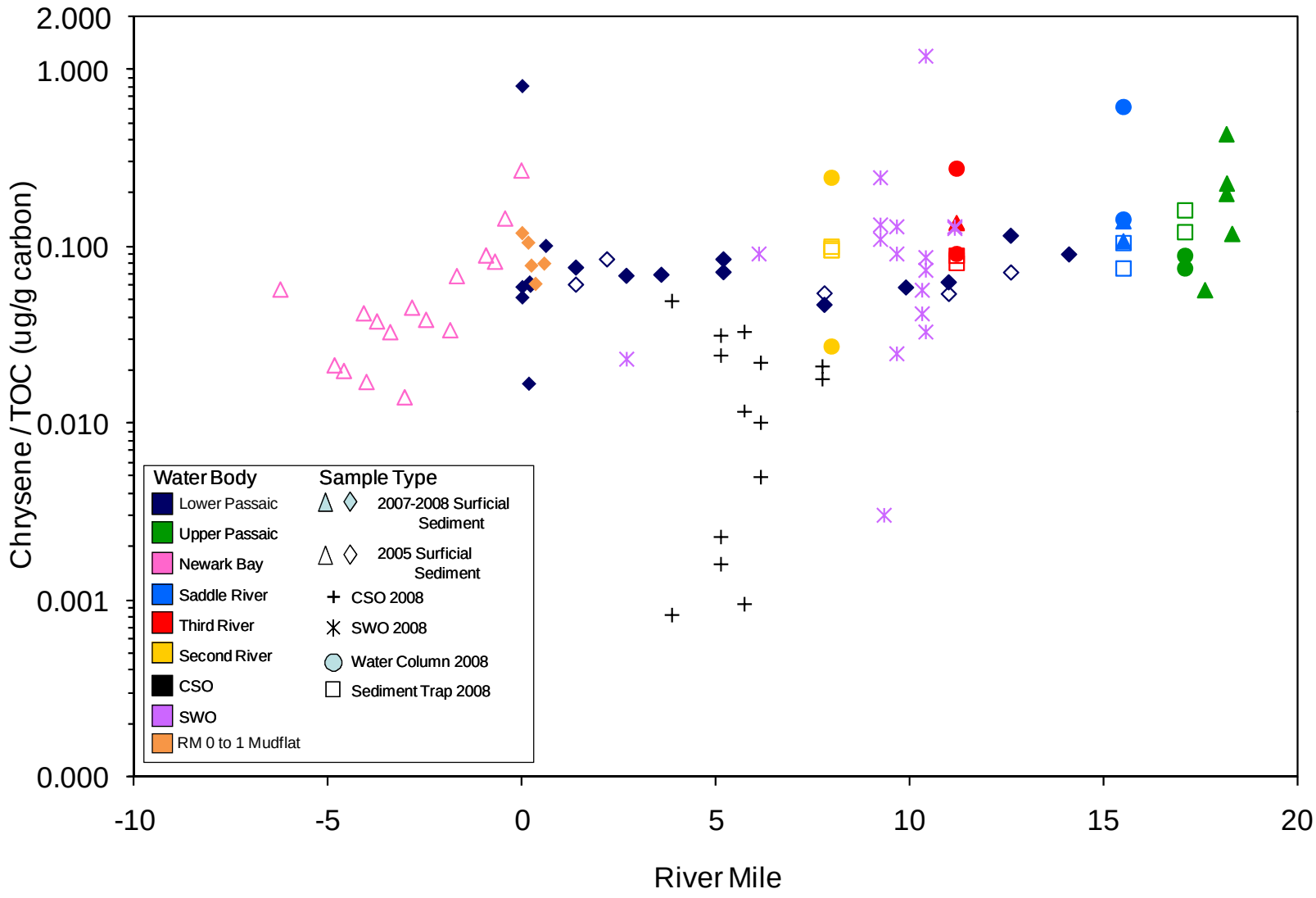


Chrysene Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-13c

2009

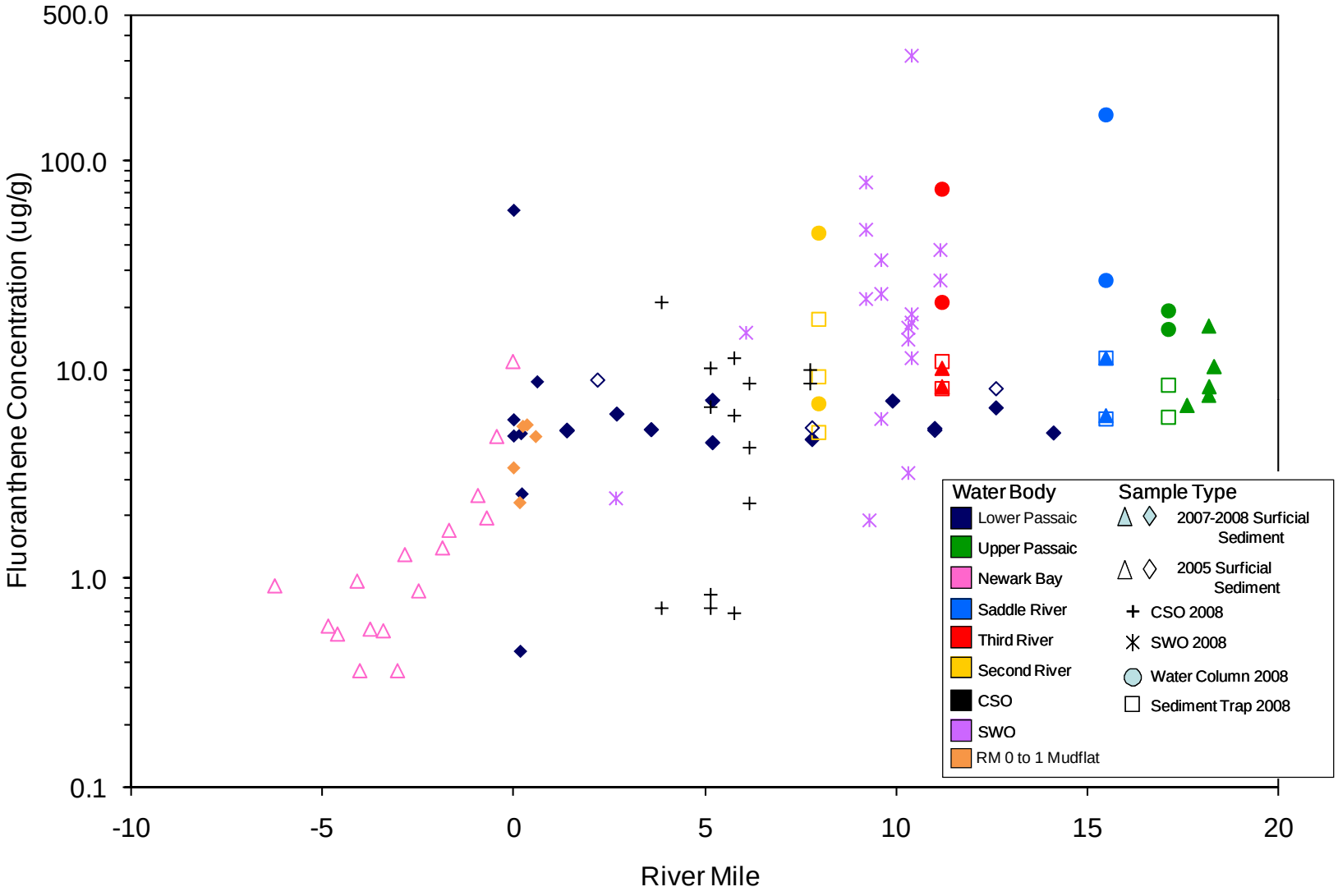


Chrysene / TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-13d

2009

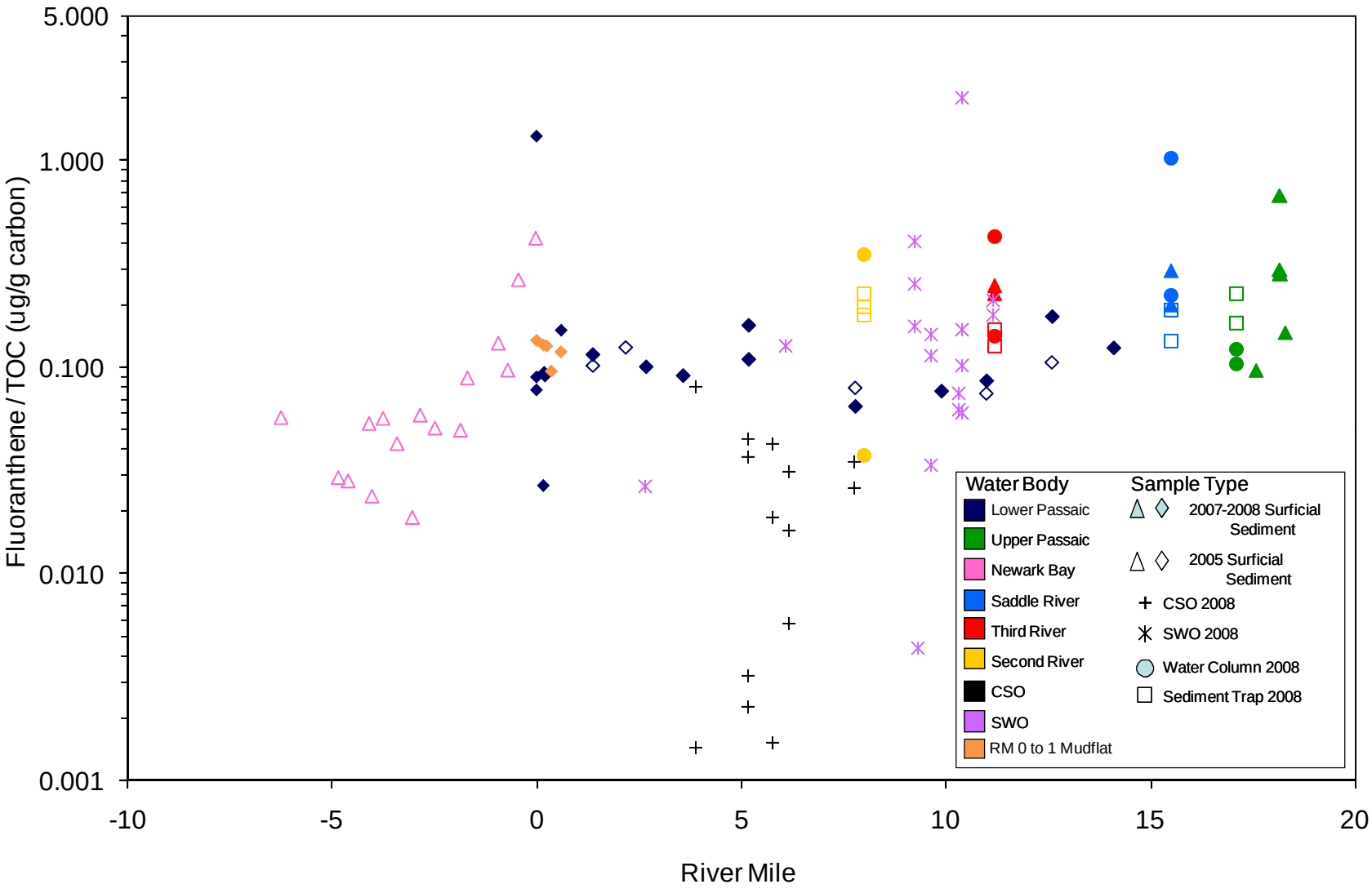


Fluoranthene Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-13e

2009

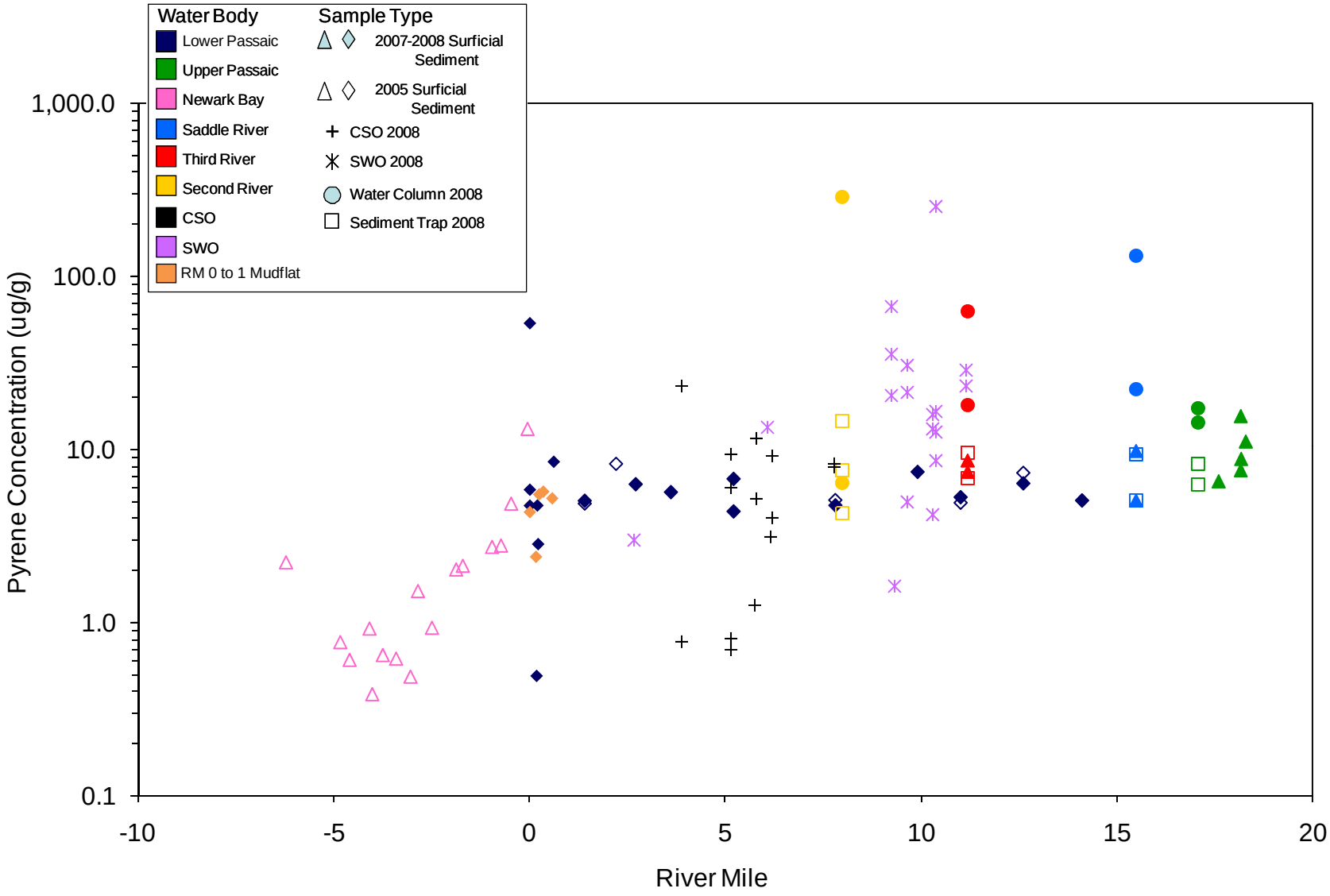


Fluoranthene / TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-13f

2009

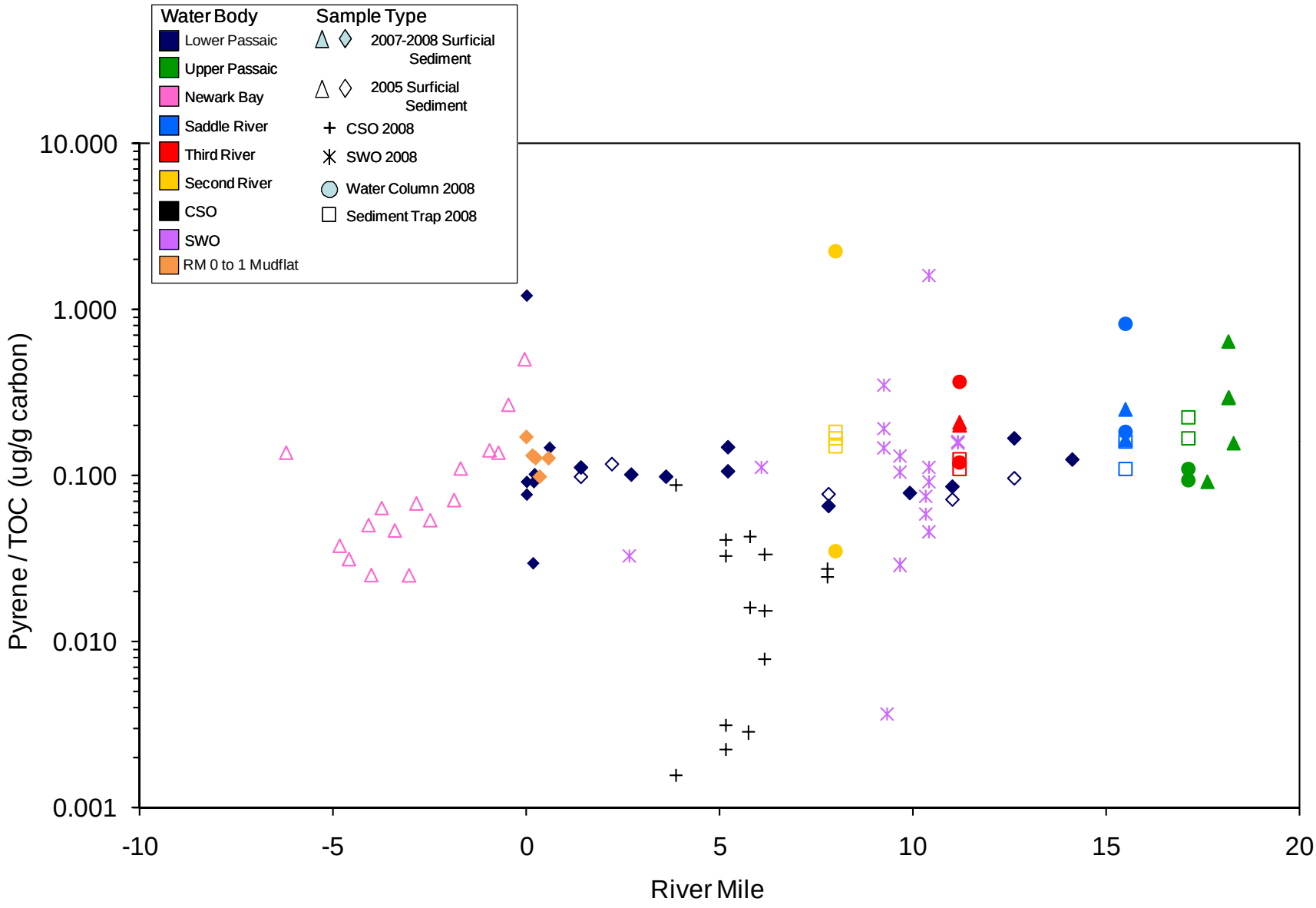


Pyrene Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-13g

2009

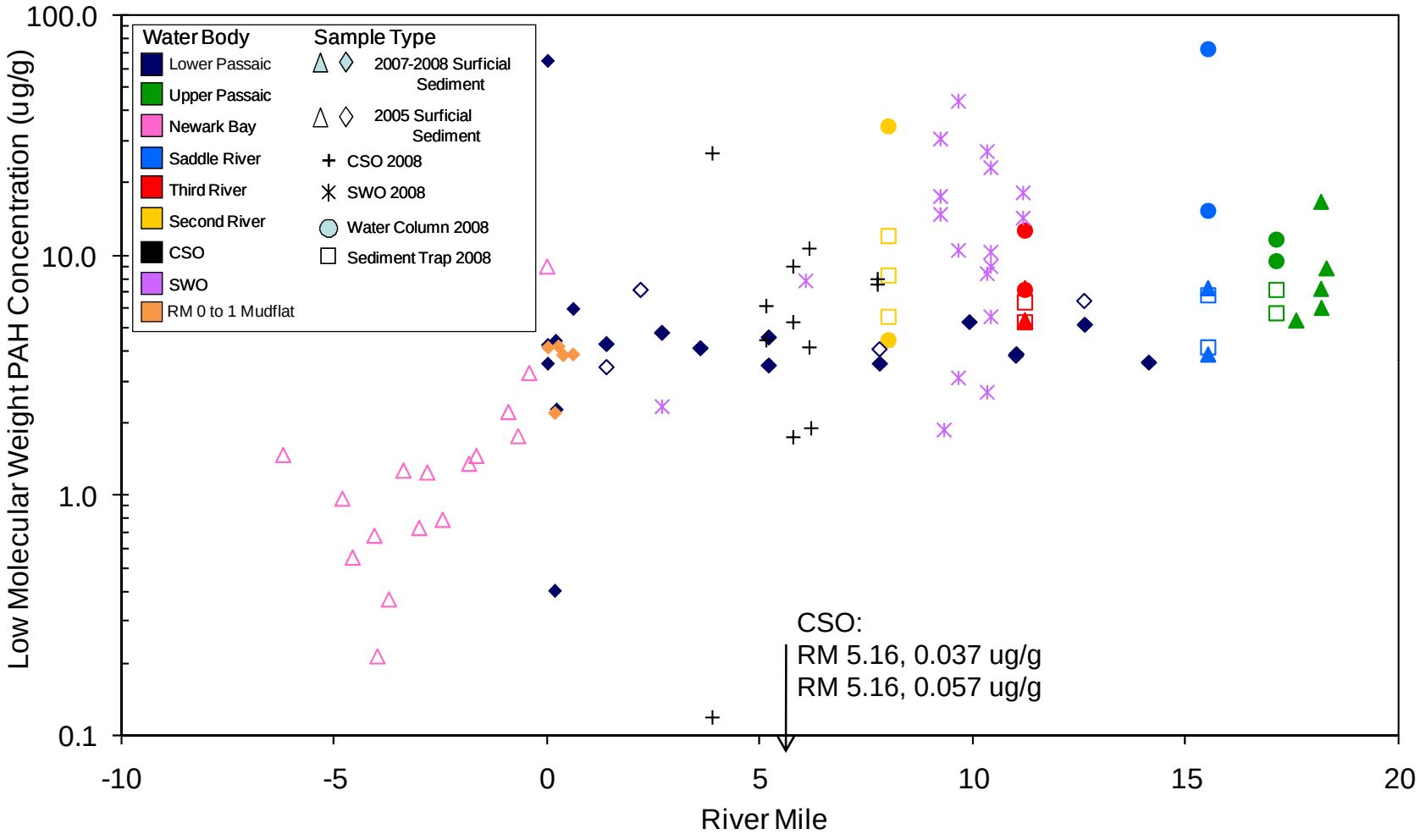


Pyrene / TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-13h

2009

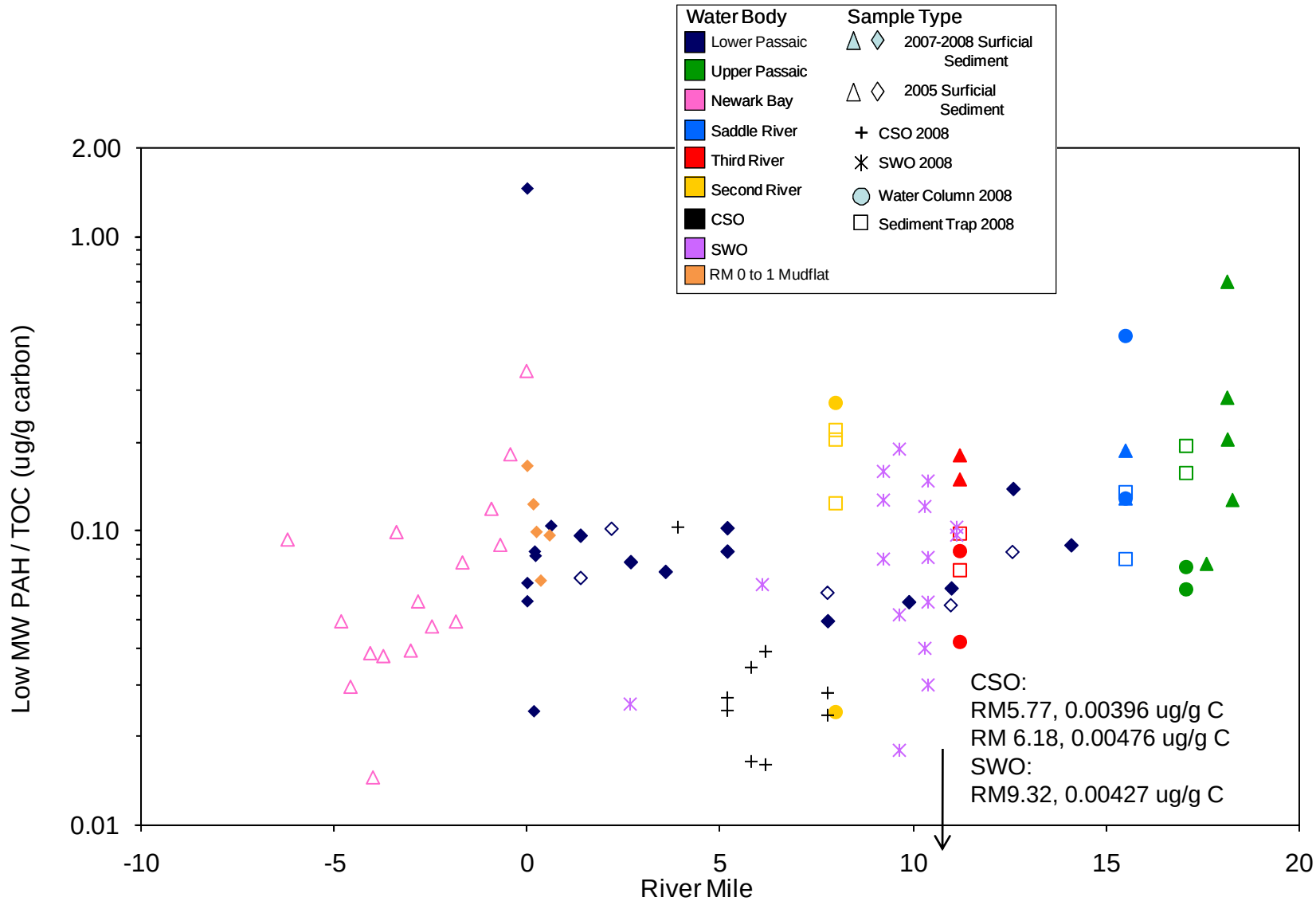


Low Molecular Weight PAH Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-13i

2009

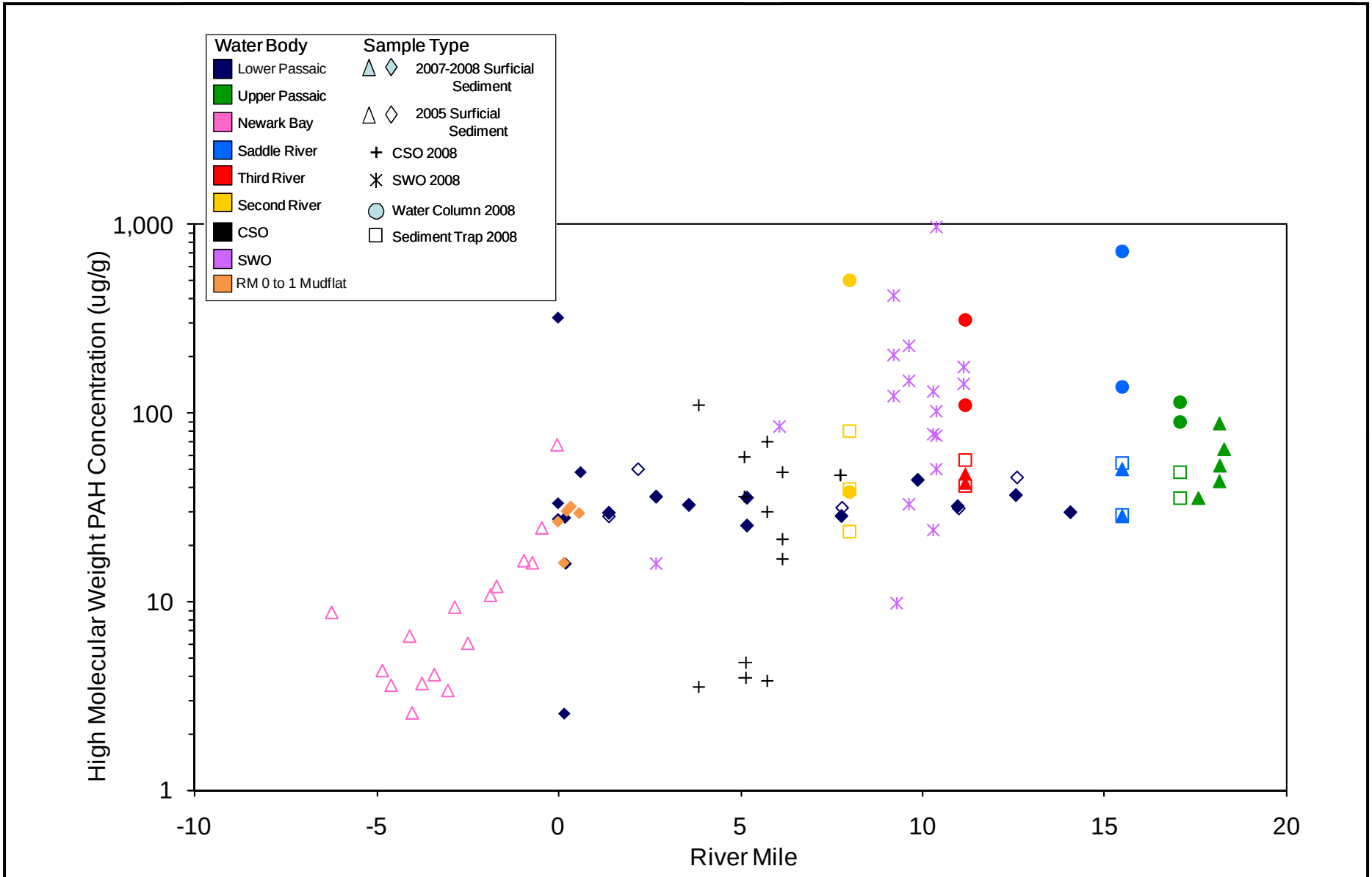


Low Molecular Weight PAH / TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-13j

2009

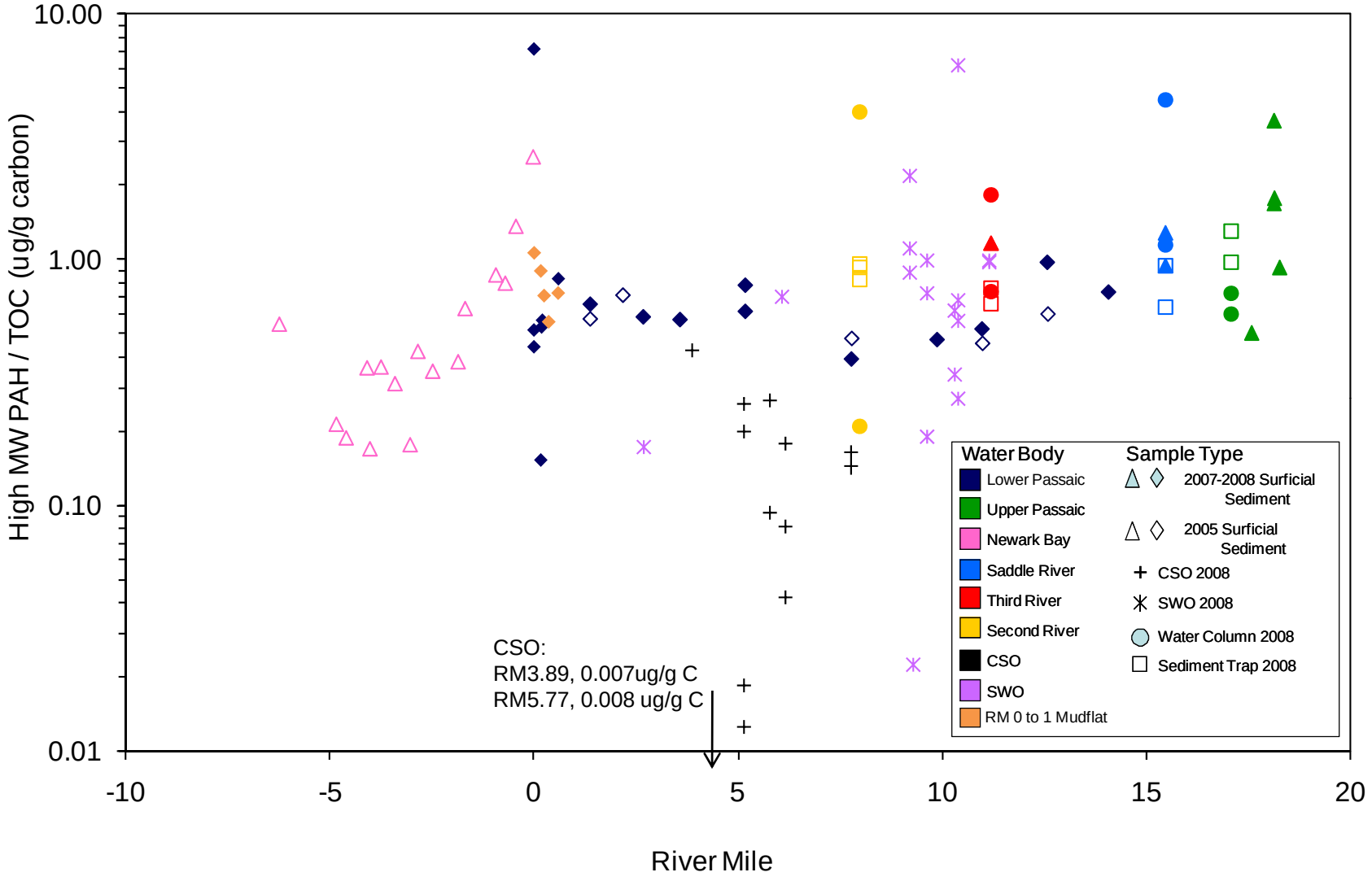


High Molecular Weight PAH Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-13k

2009

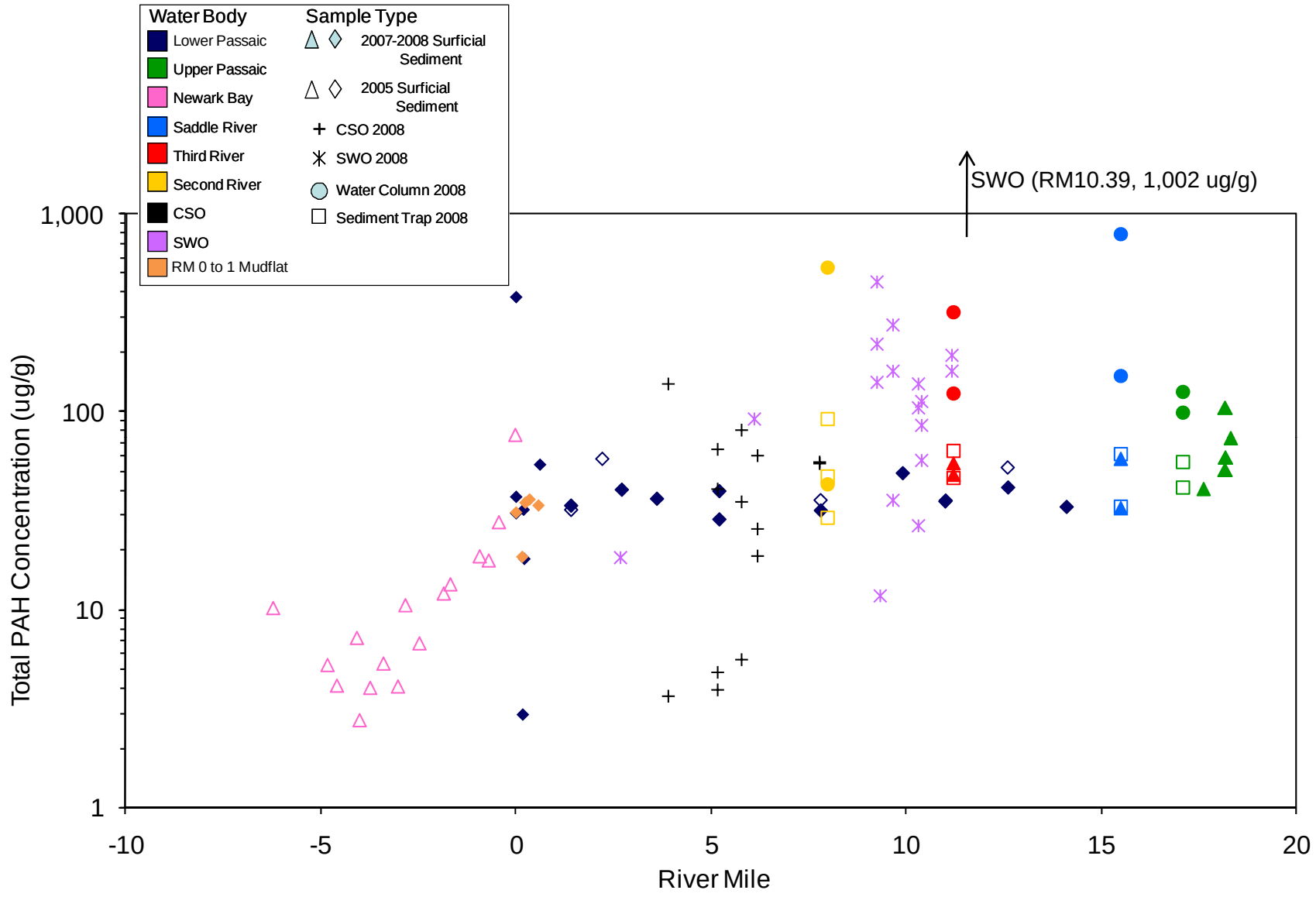


High Molecular Weight PAH / TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-13l

2009

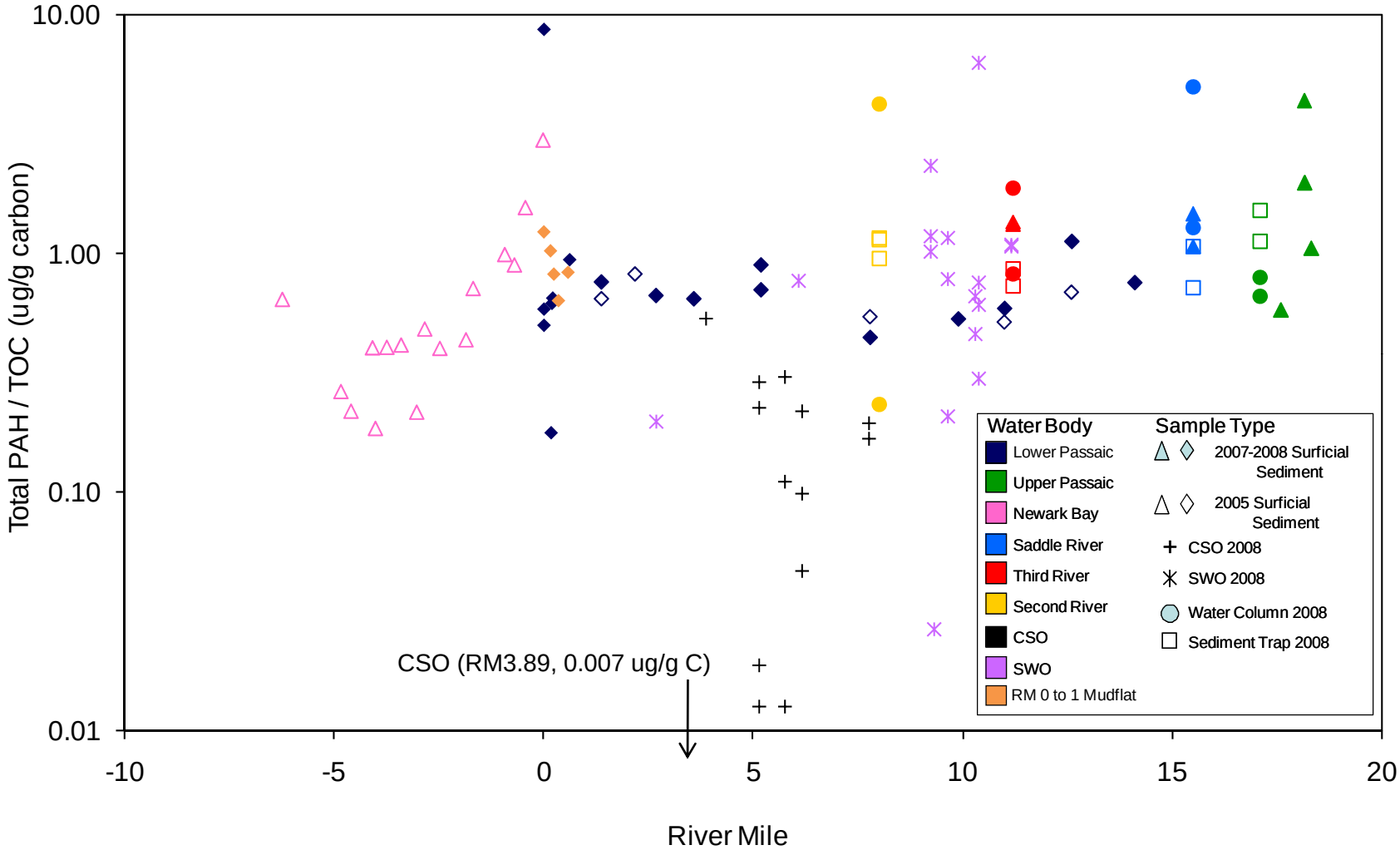


Total PAH Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-13m

2009

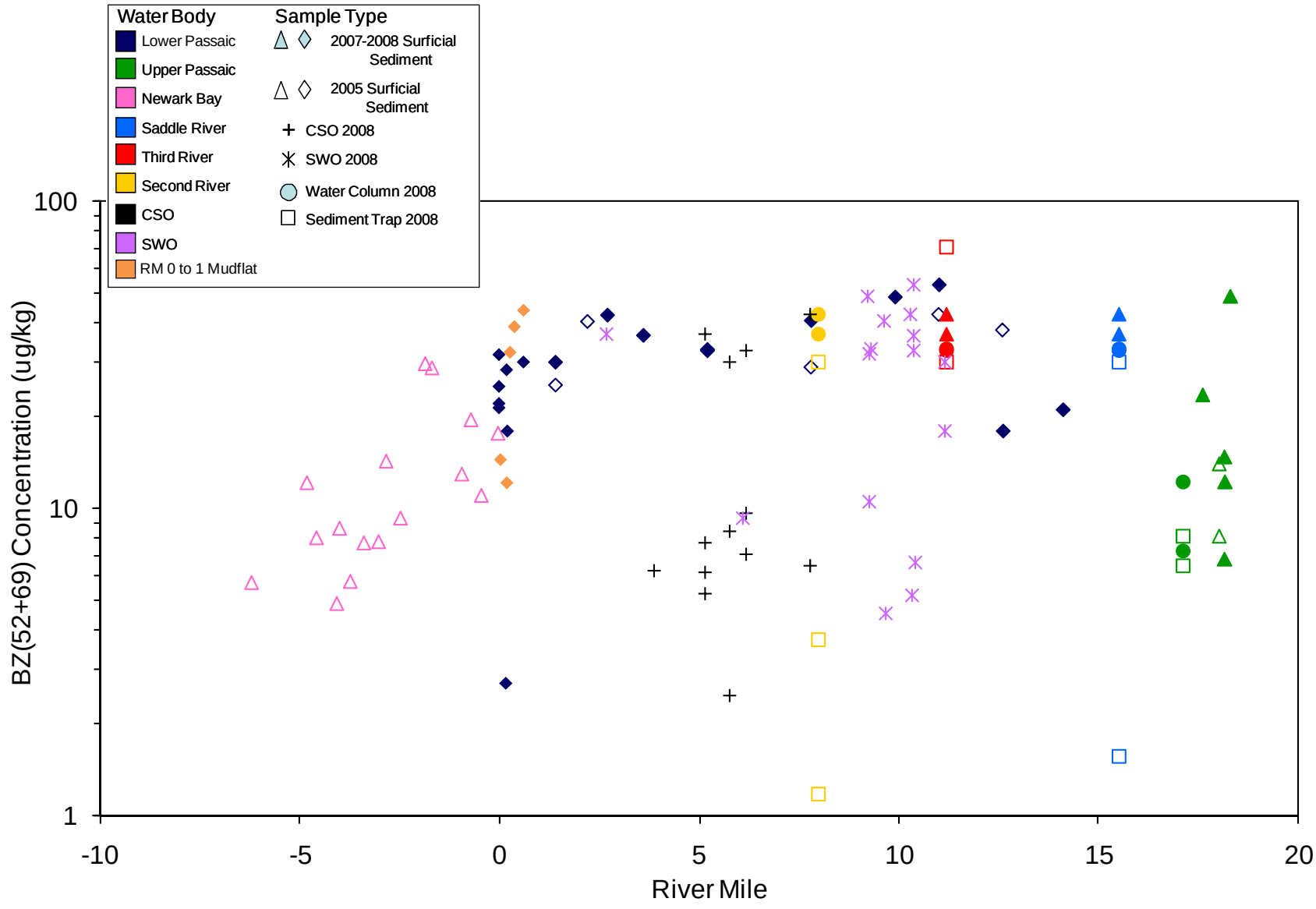


Total PAH / TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-13n

2009

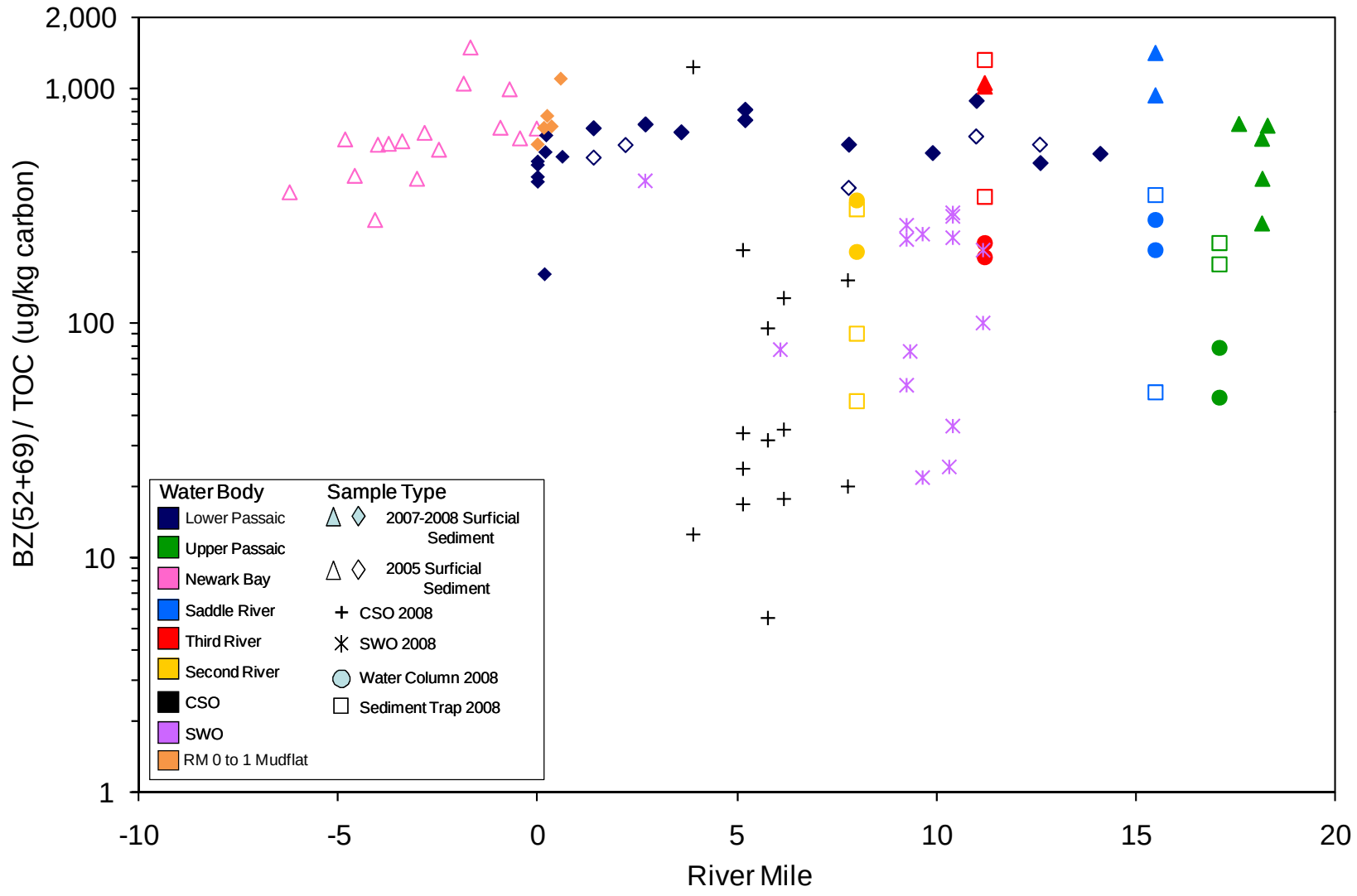


BZ (52+69) Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-14a

2009

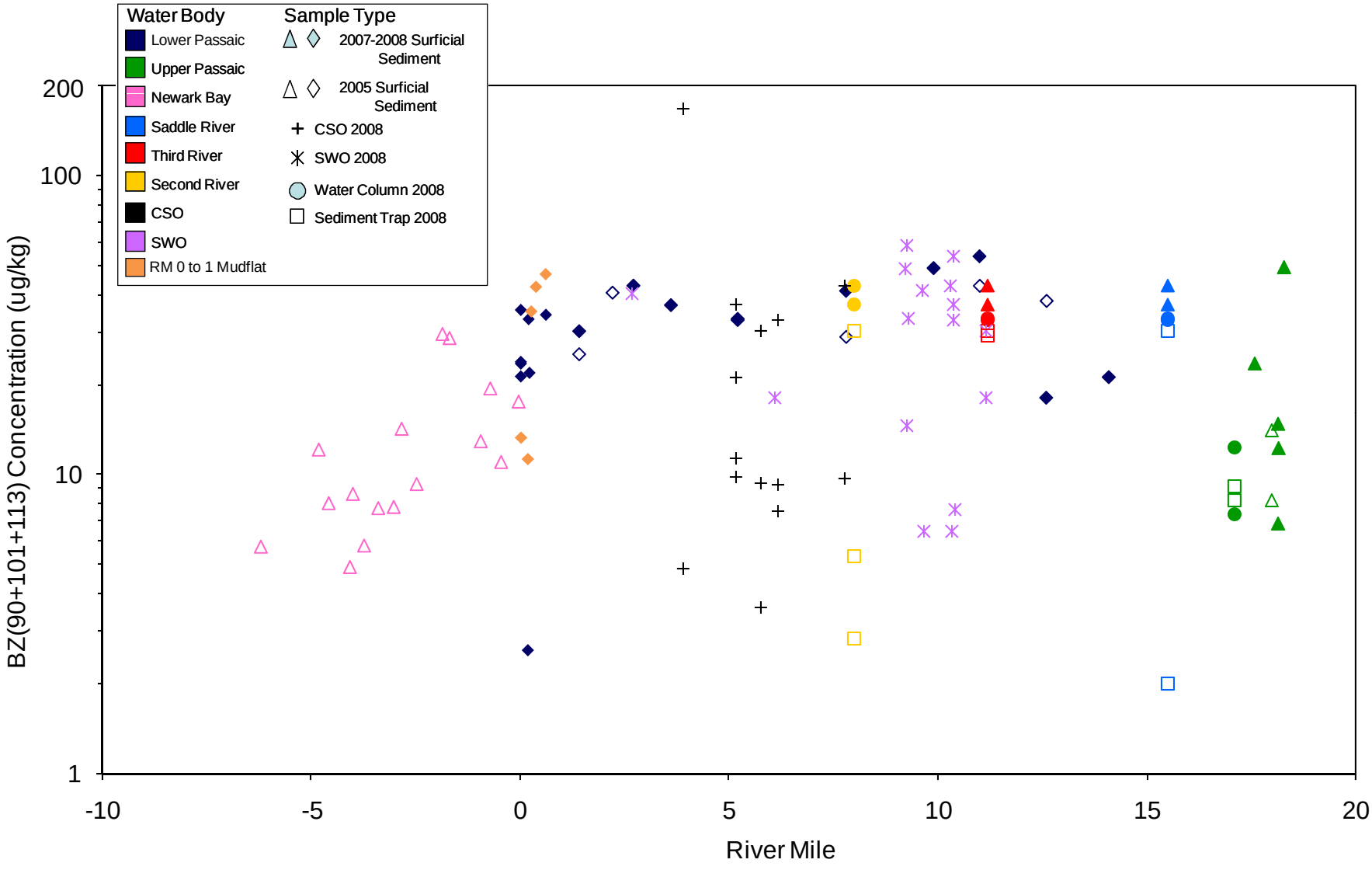


BZ (52+69) / TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-14b

2009

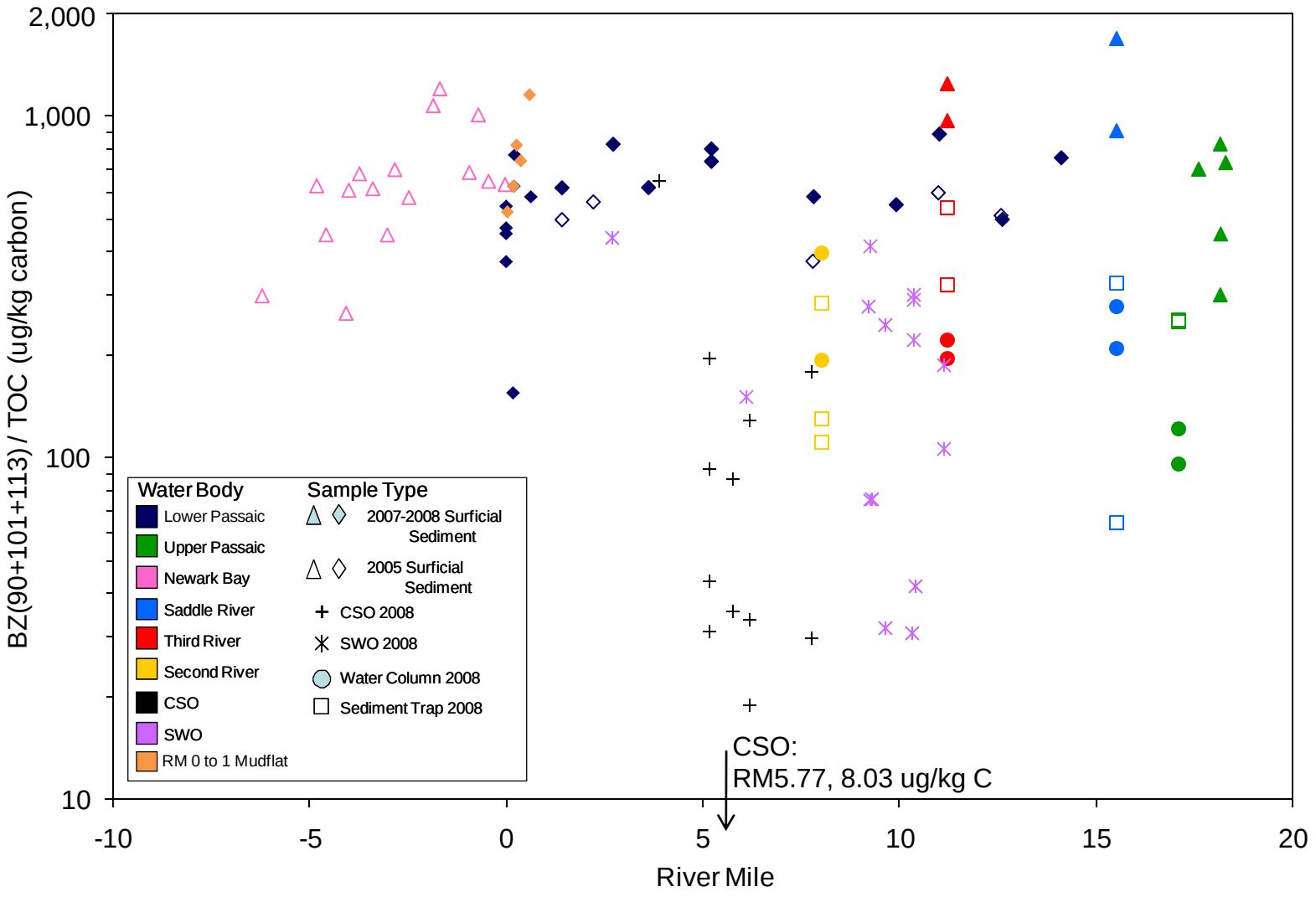


BZ (90+101+113) Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-14c

2009

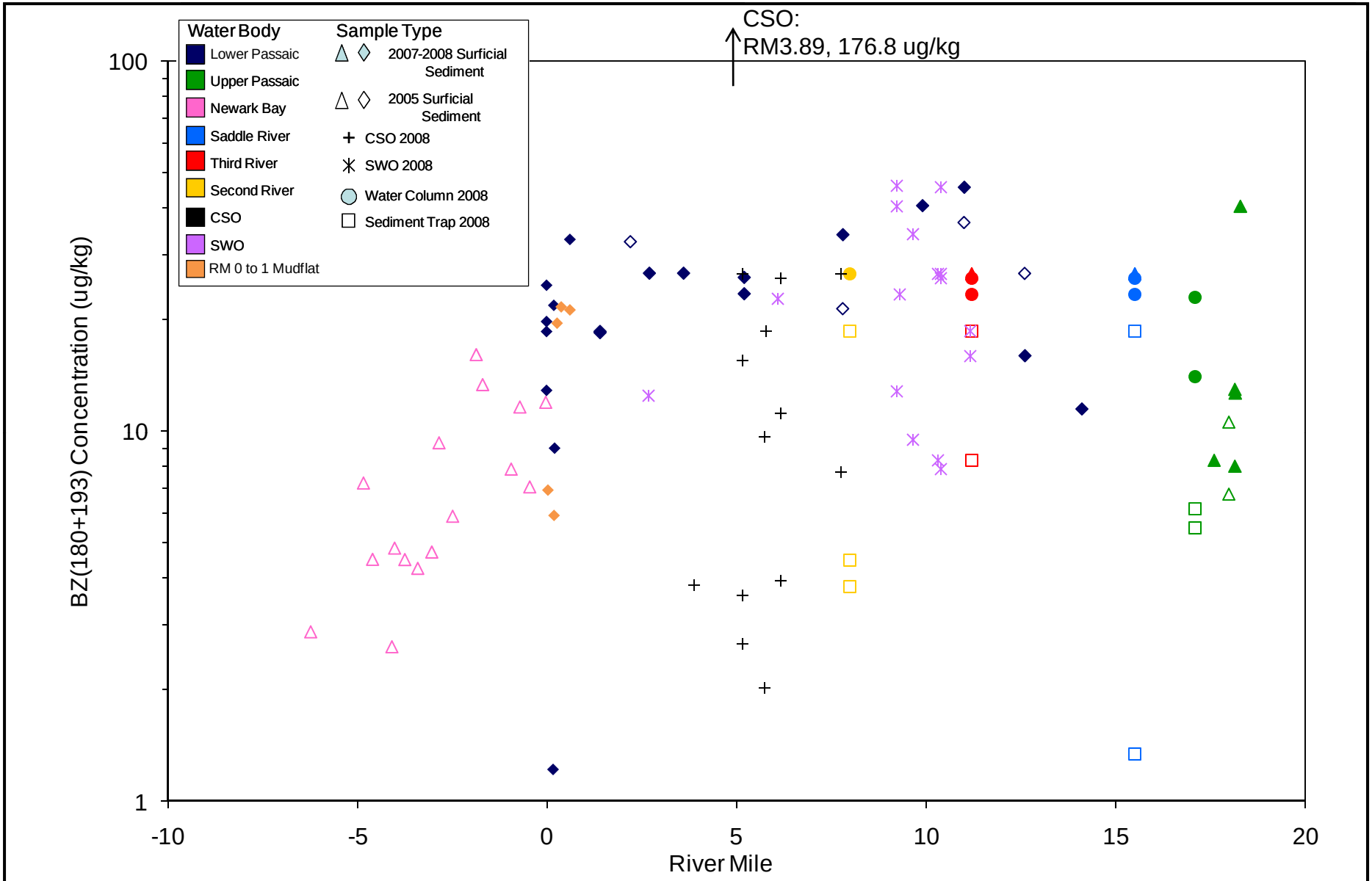


BZ (90+101+113) / TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-14d

2009

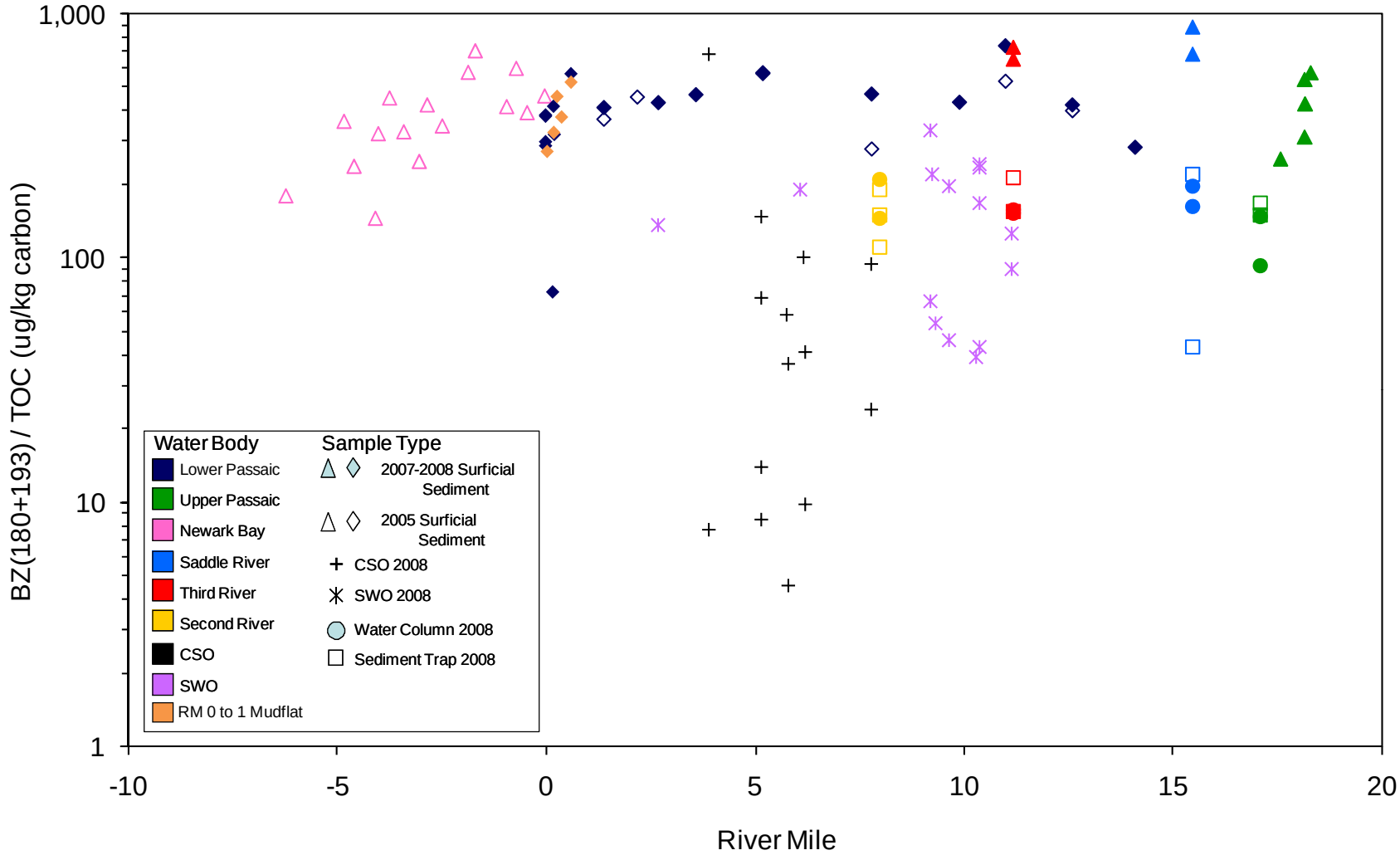


BZ (180+193) Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-14e

2009

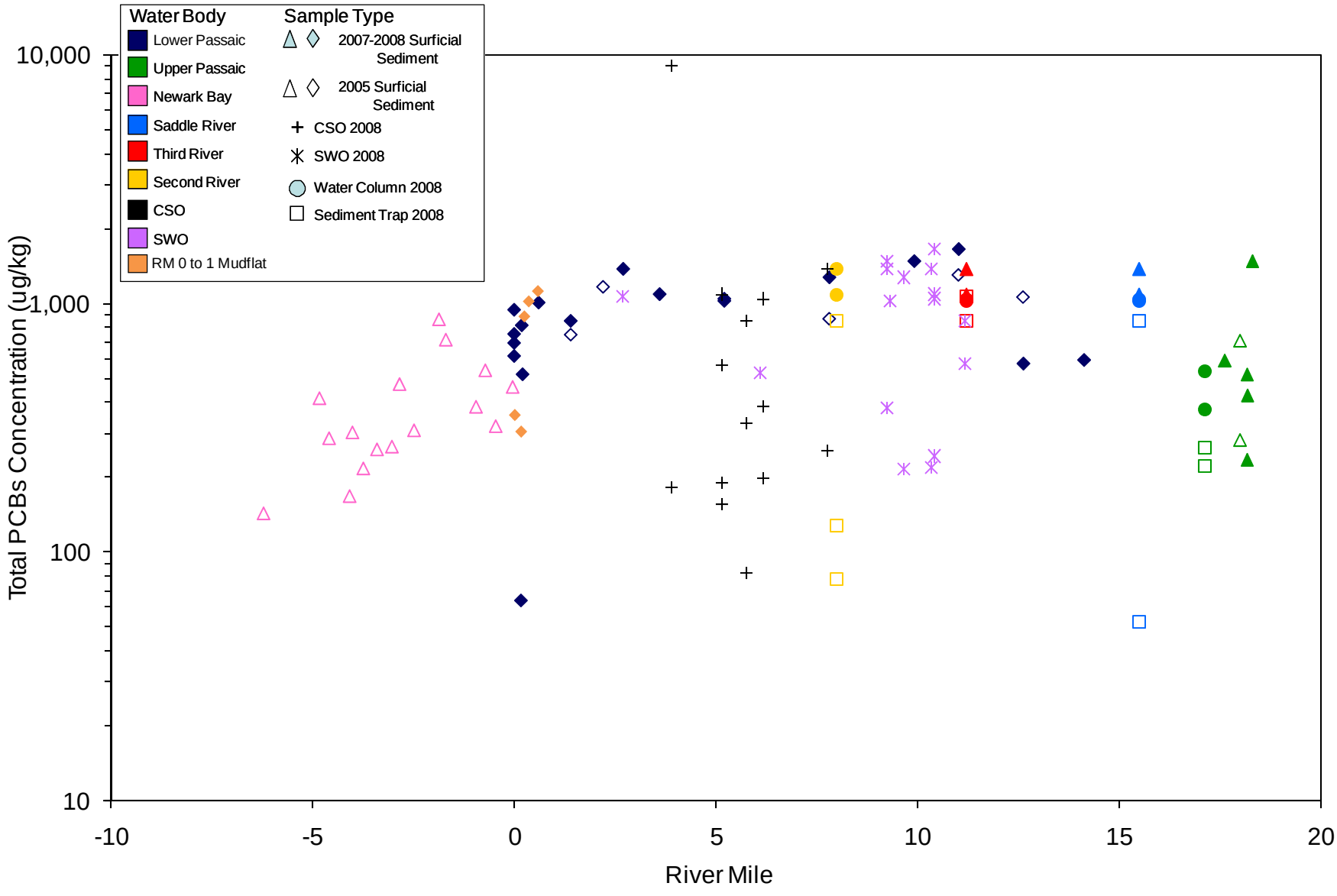


BZ (180+193) / TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-14f

2009

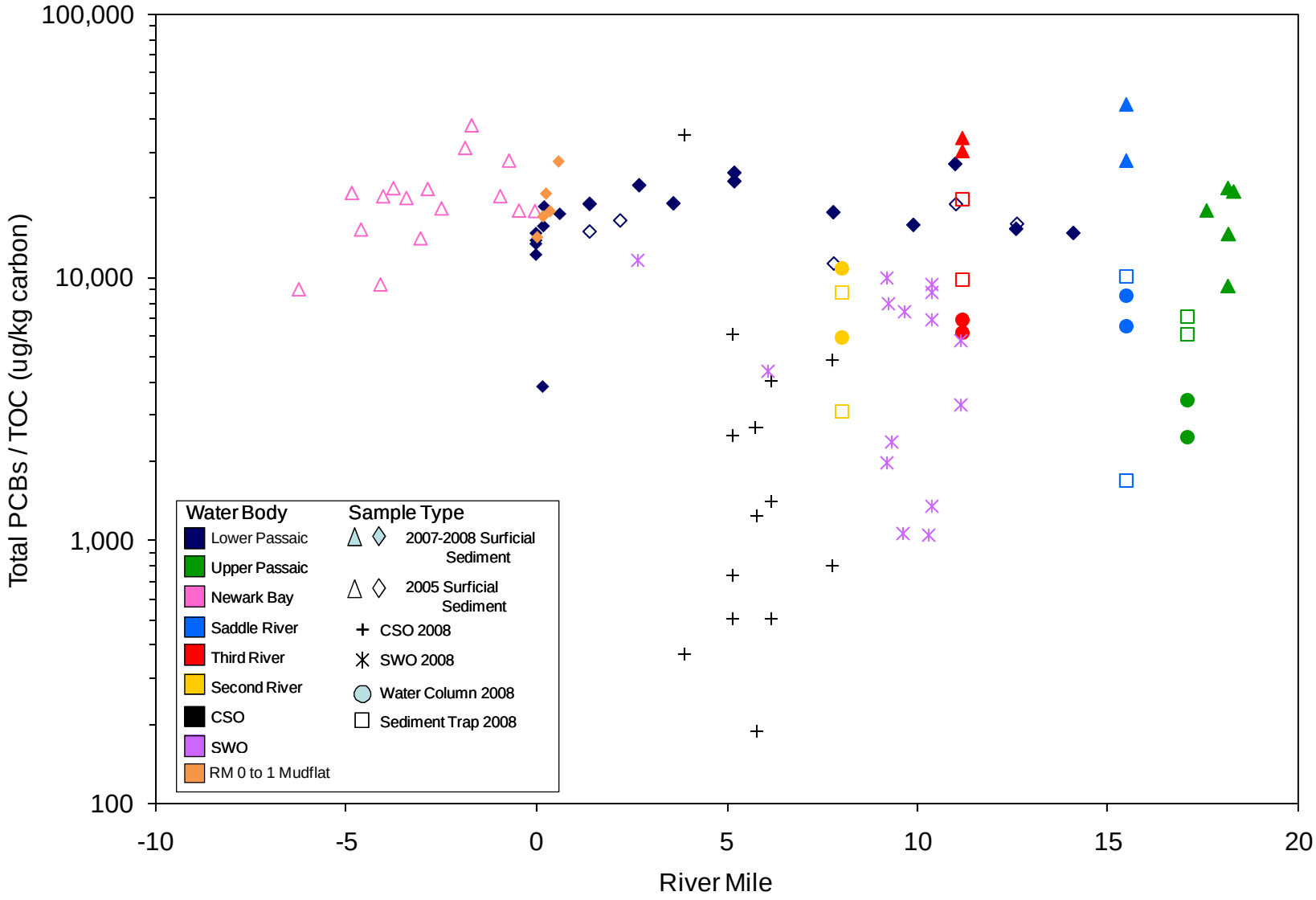


Total PCBs Concentration versus River Mile

Lower Passaic River Restoration Project

Figure 14-14g

2009

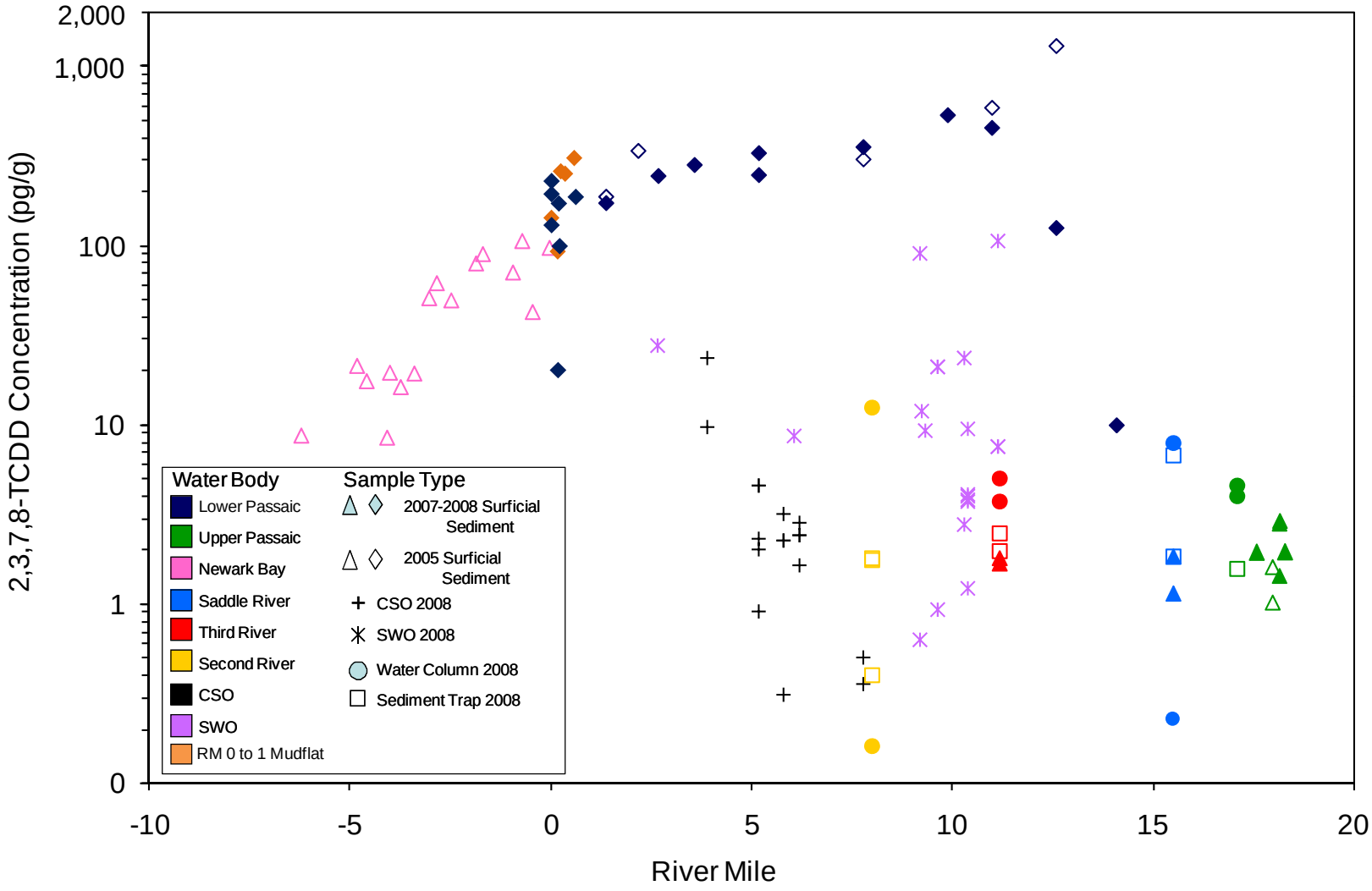


Total PCBs / TOC Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-14h

2009

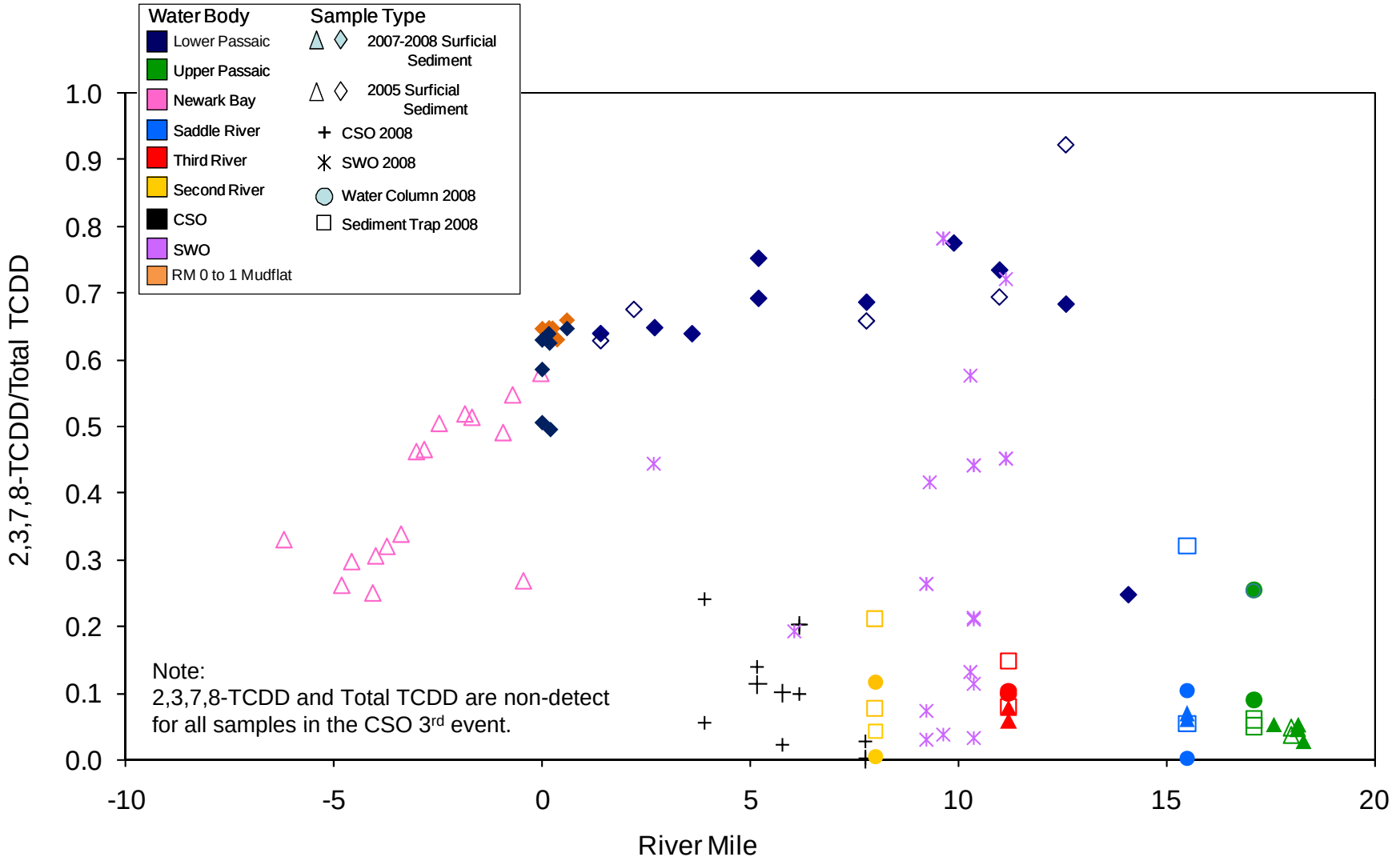


2,3,7,8-TCDD Concentration versus River Mile

Figure 14-15a

2009

Lower Passaic River Restoration Project

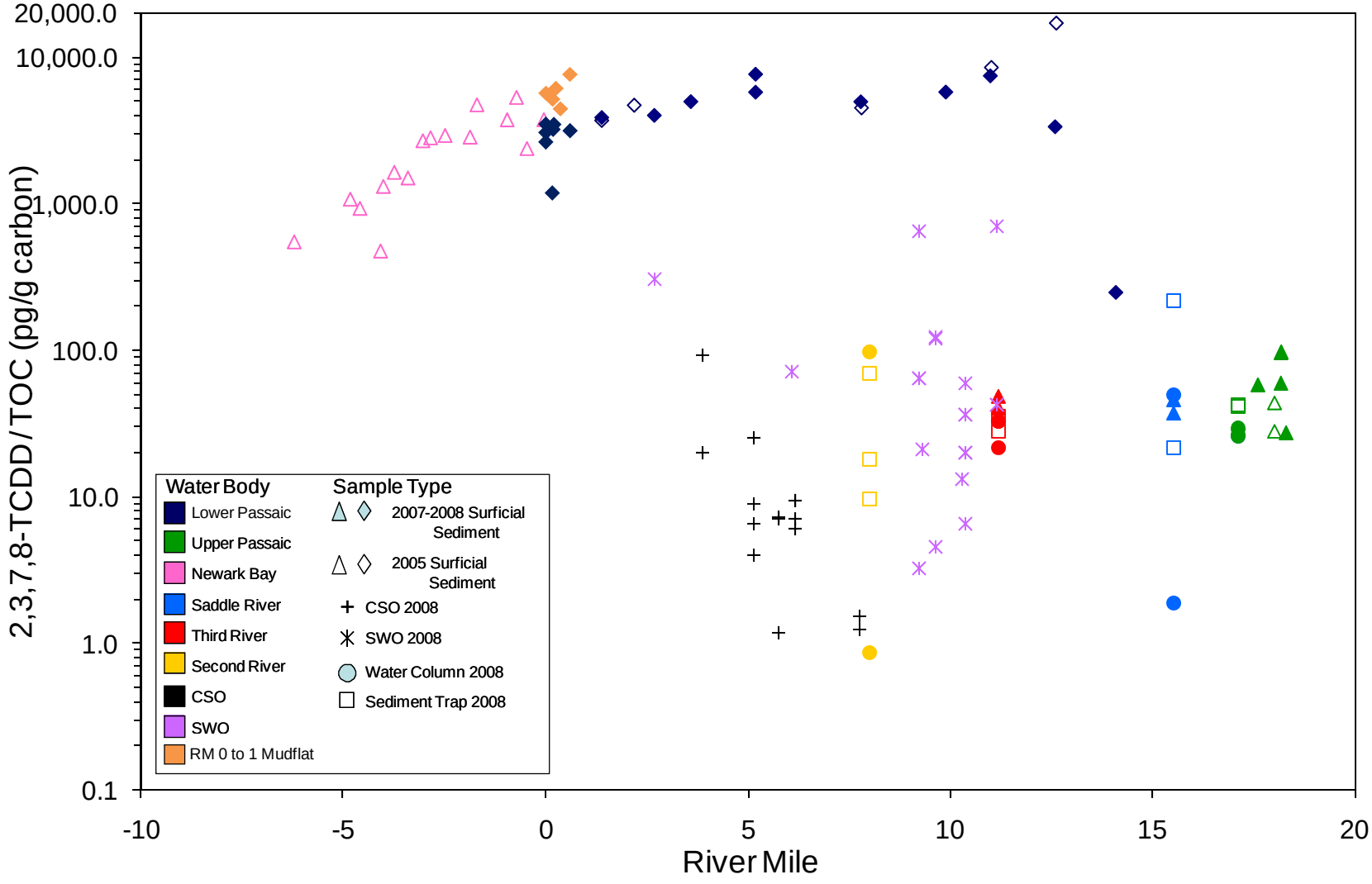


2,3,7,8-TCDD / Total TCDD Ratio versus River Mile

Lower Passaic River Restoration Project

Figure 14-15b

2009

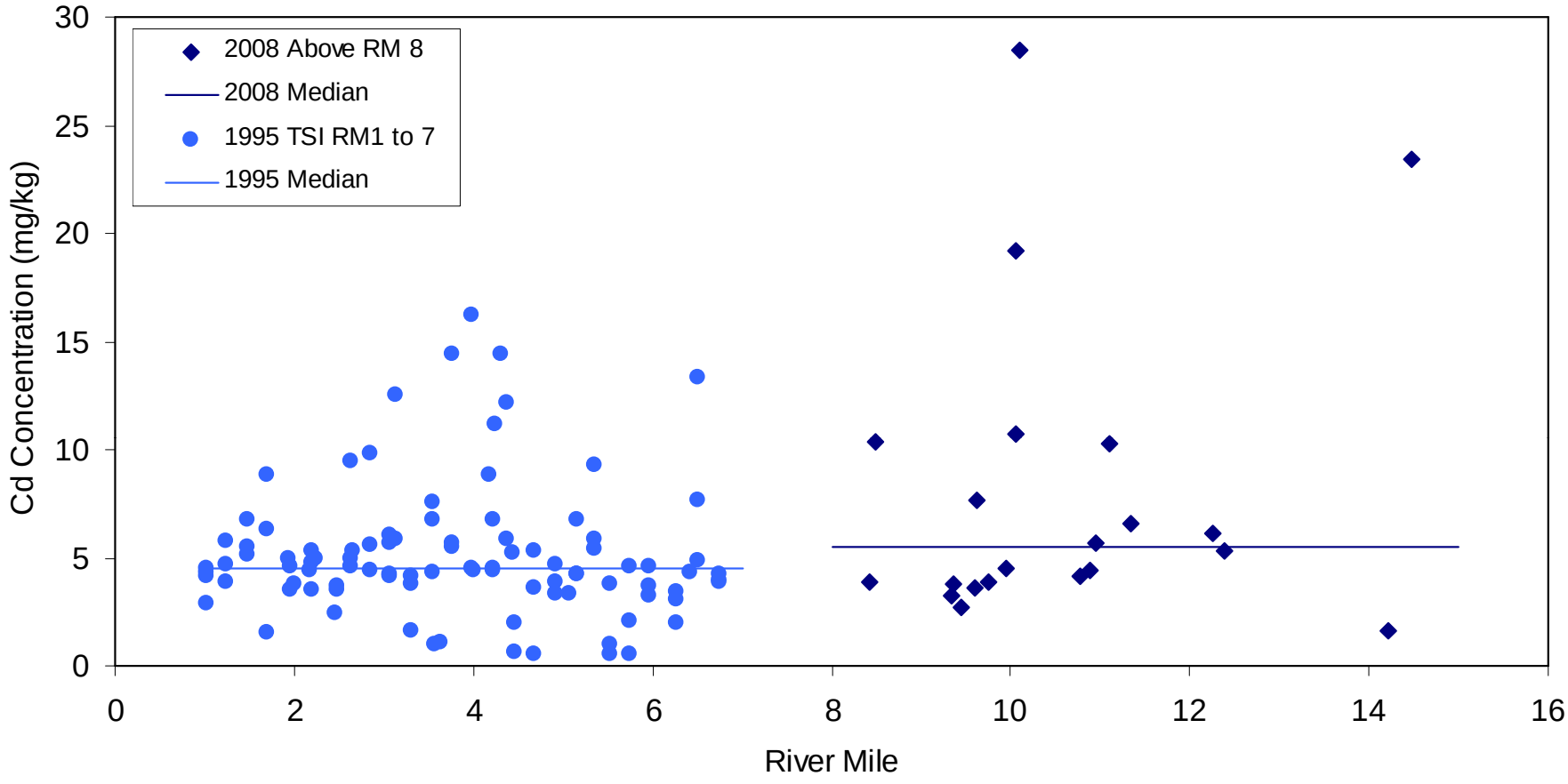


2,3,7,8-TCDD / TOC Ratio versus River Mile

Figure 14-15c

2009

Lower Passaic River Restoration Project



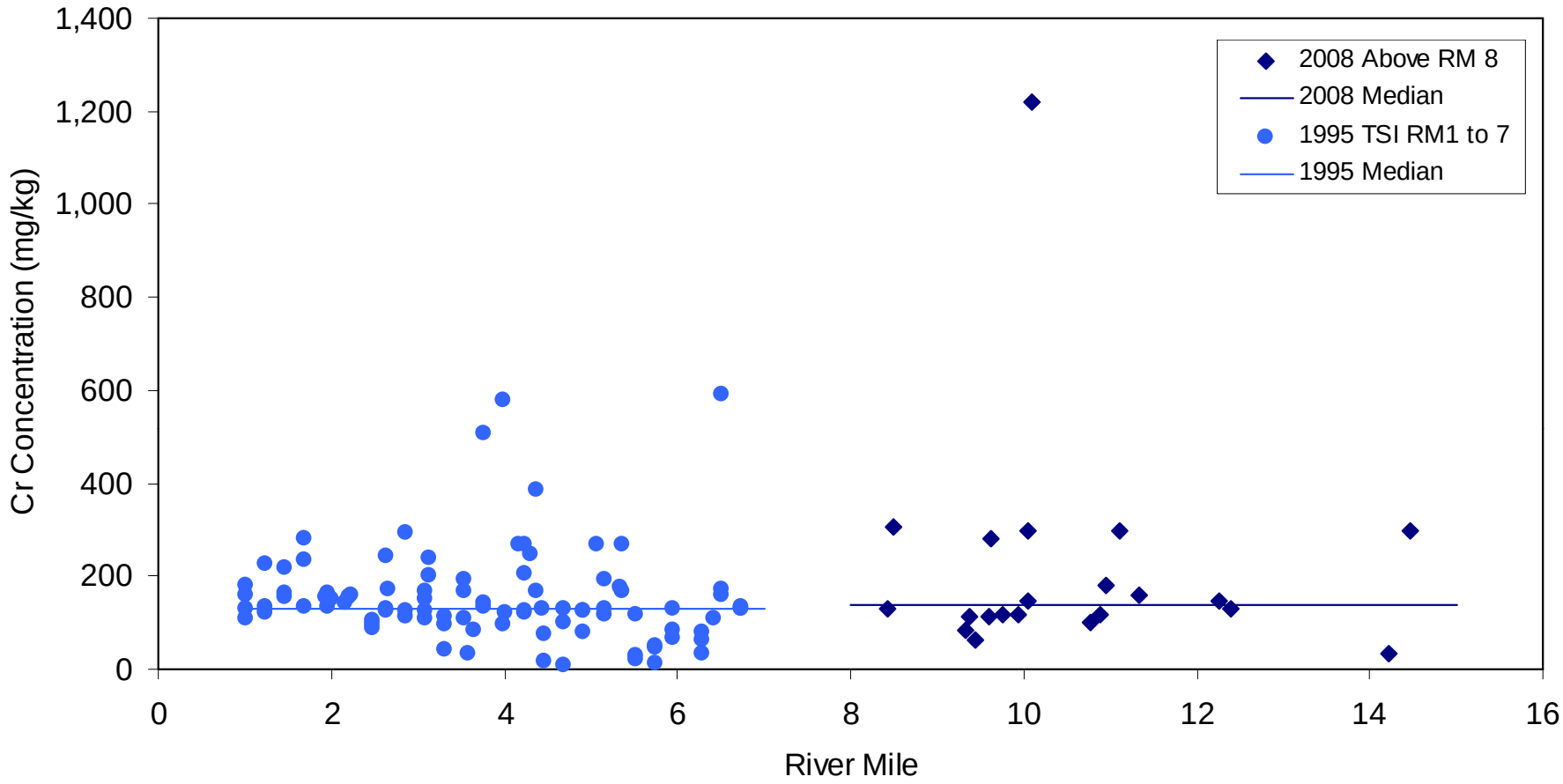
Note:

1. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

Cadmium Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-16a

2009



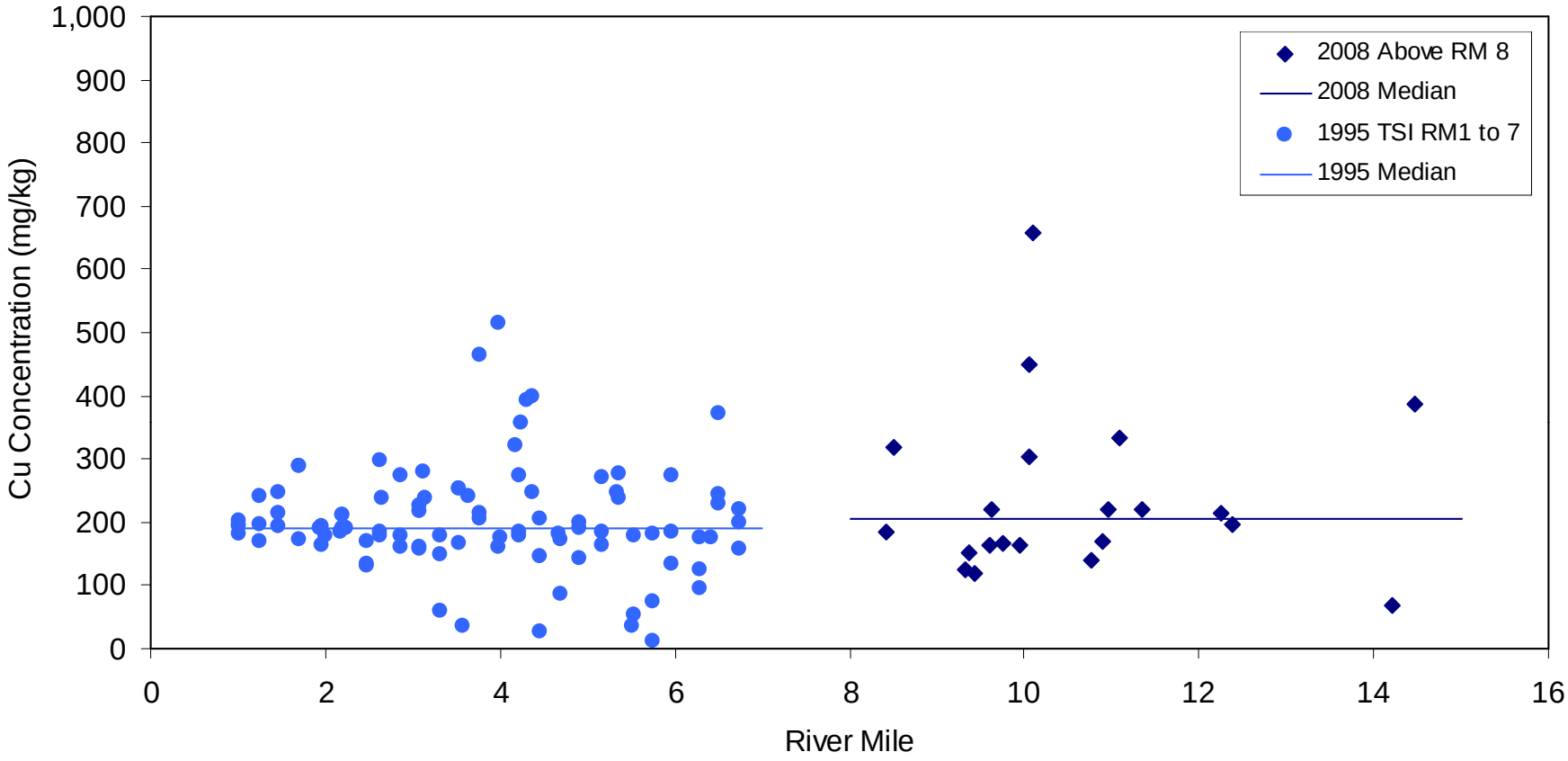
Note:

1. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

Chromium Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-16b

2009



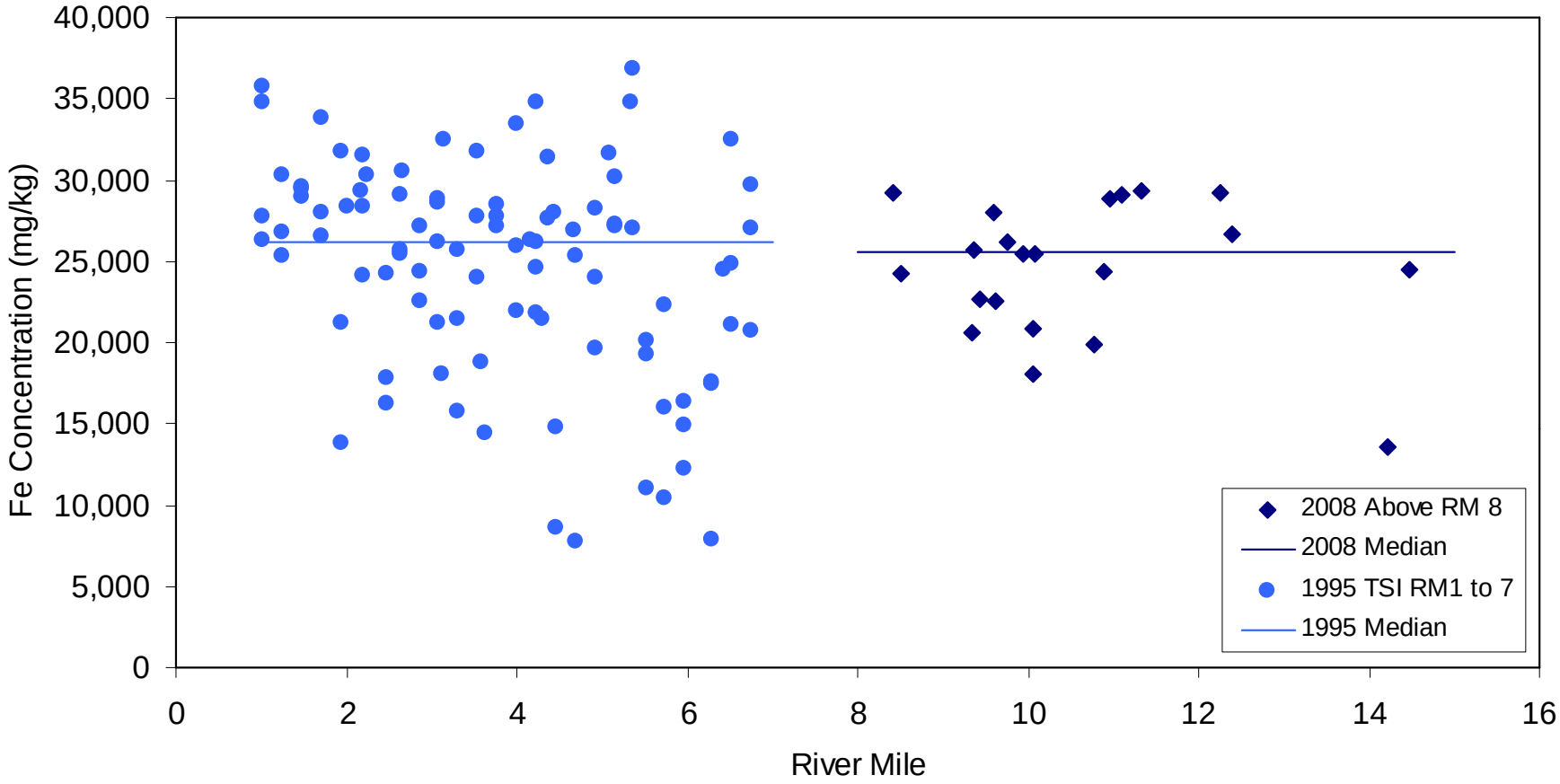
Note:

1. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

Copper Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-16c

2009



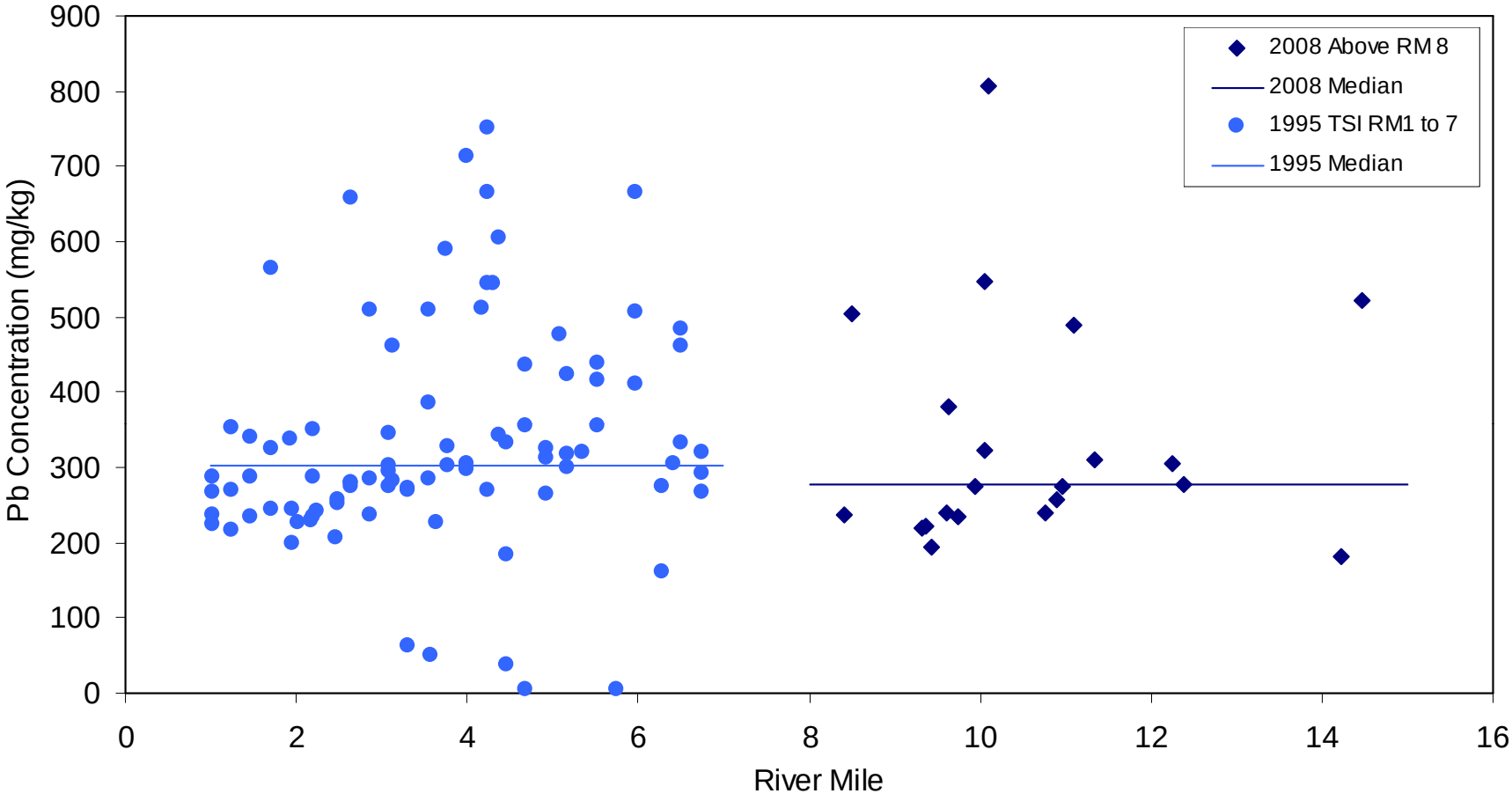
Note:

1. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

Iron Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-16d

2009



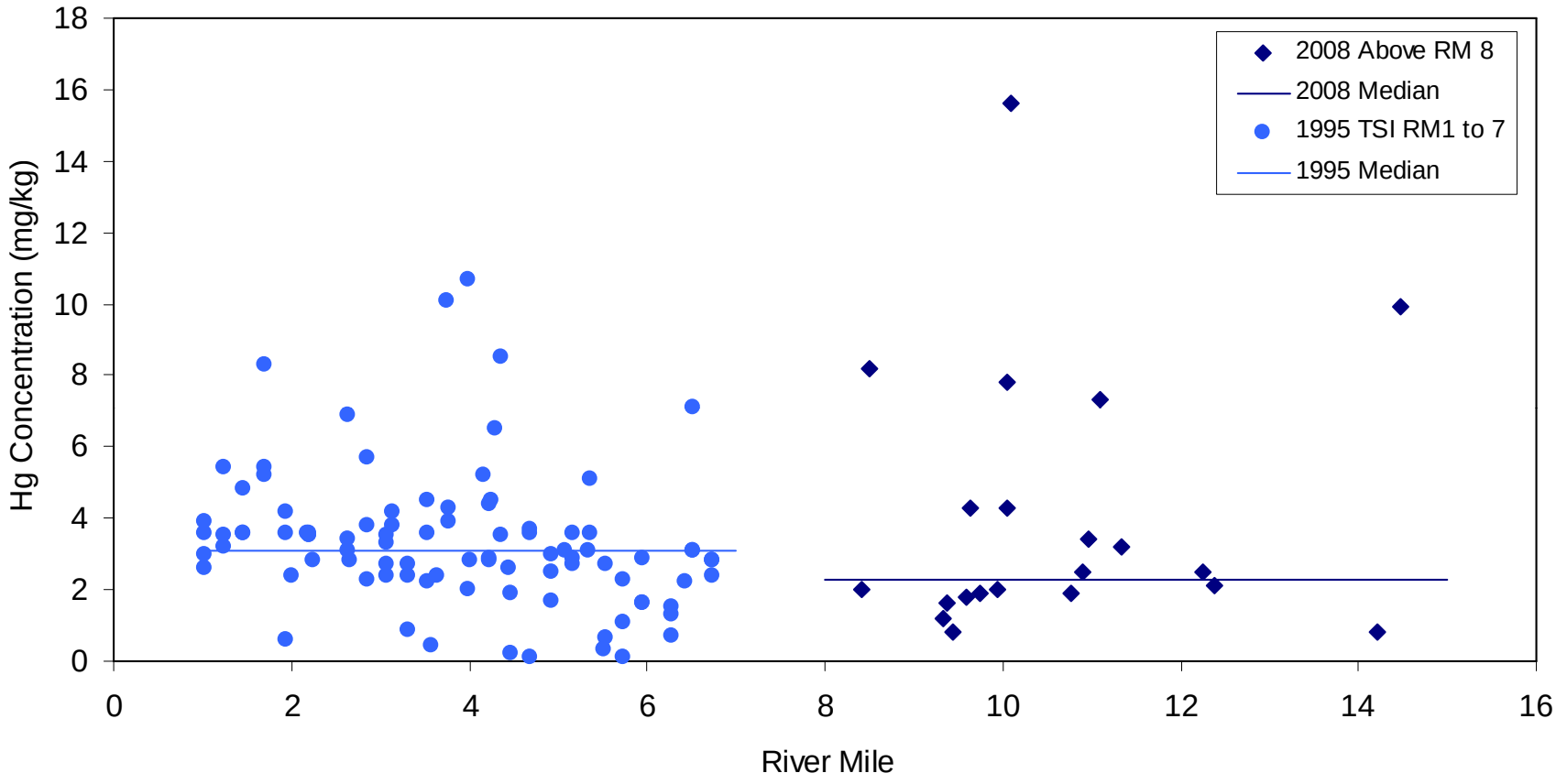
Note:

1. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

Lead Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-16e

2009



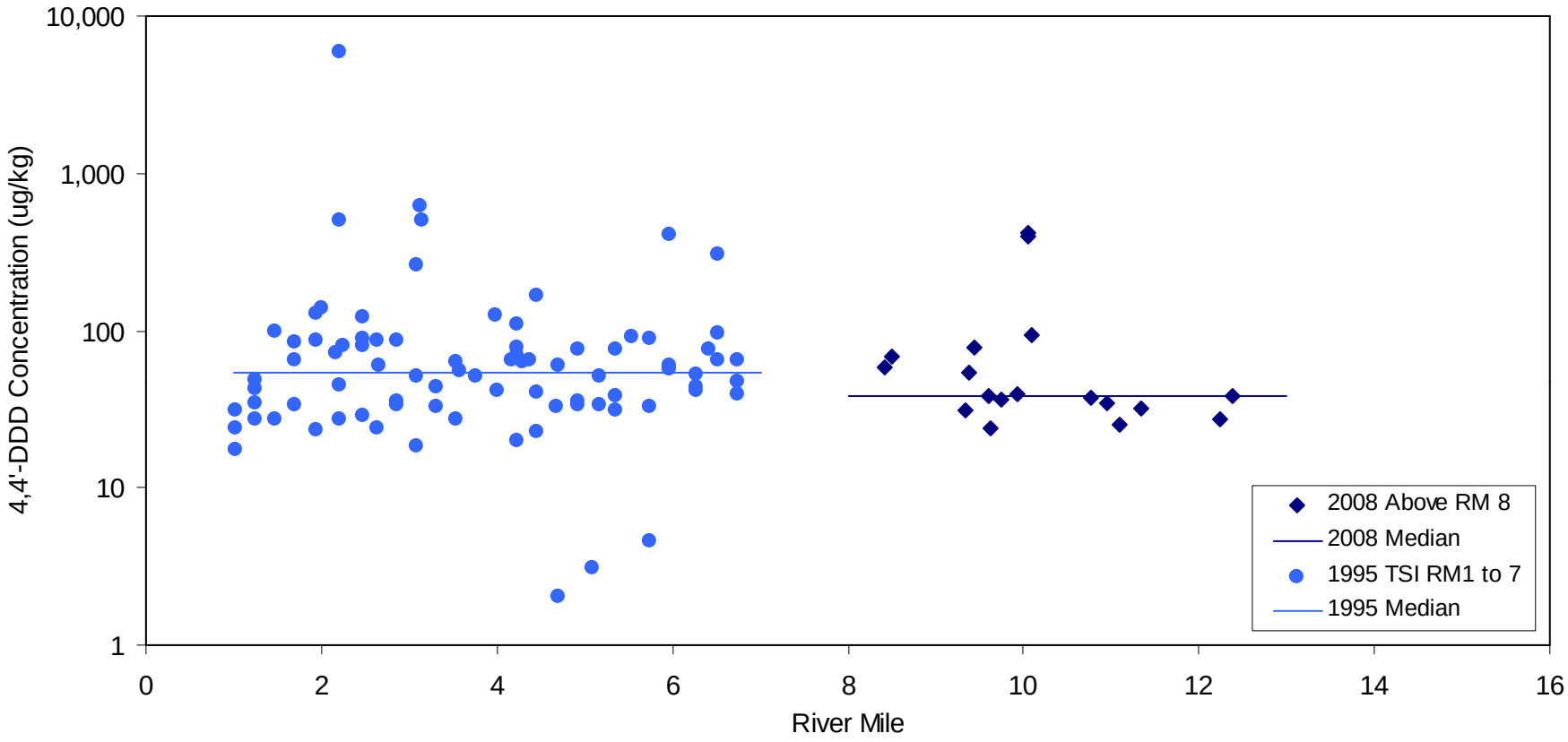
Note:

1. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

Mercury Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-16f

2009



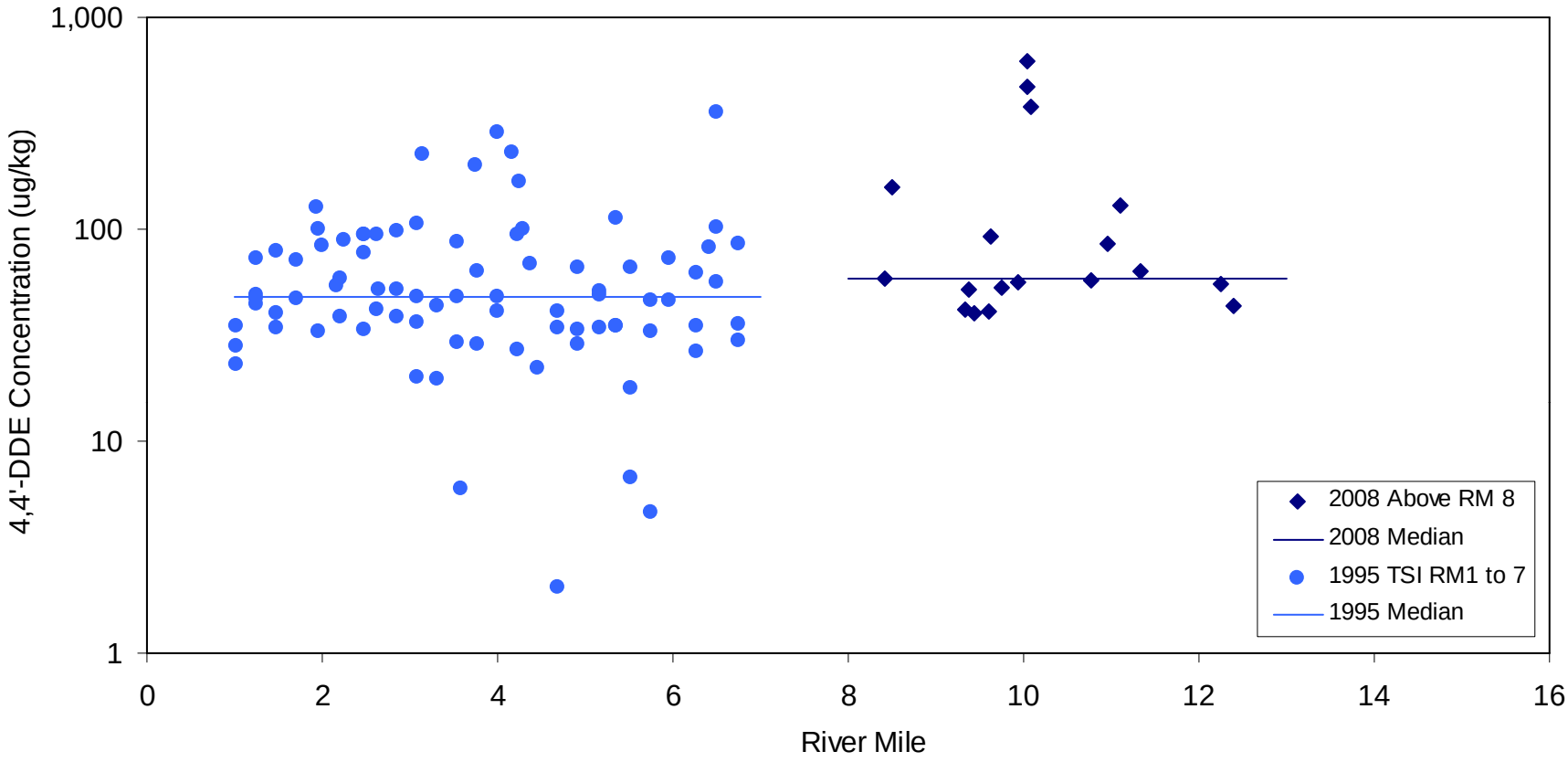
Note:

1. Vertical scale is logarithmic.
2. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

4,4'-DDD Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-17a

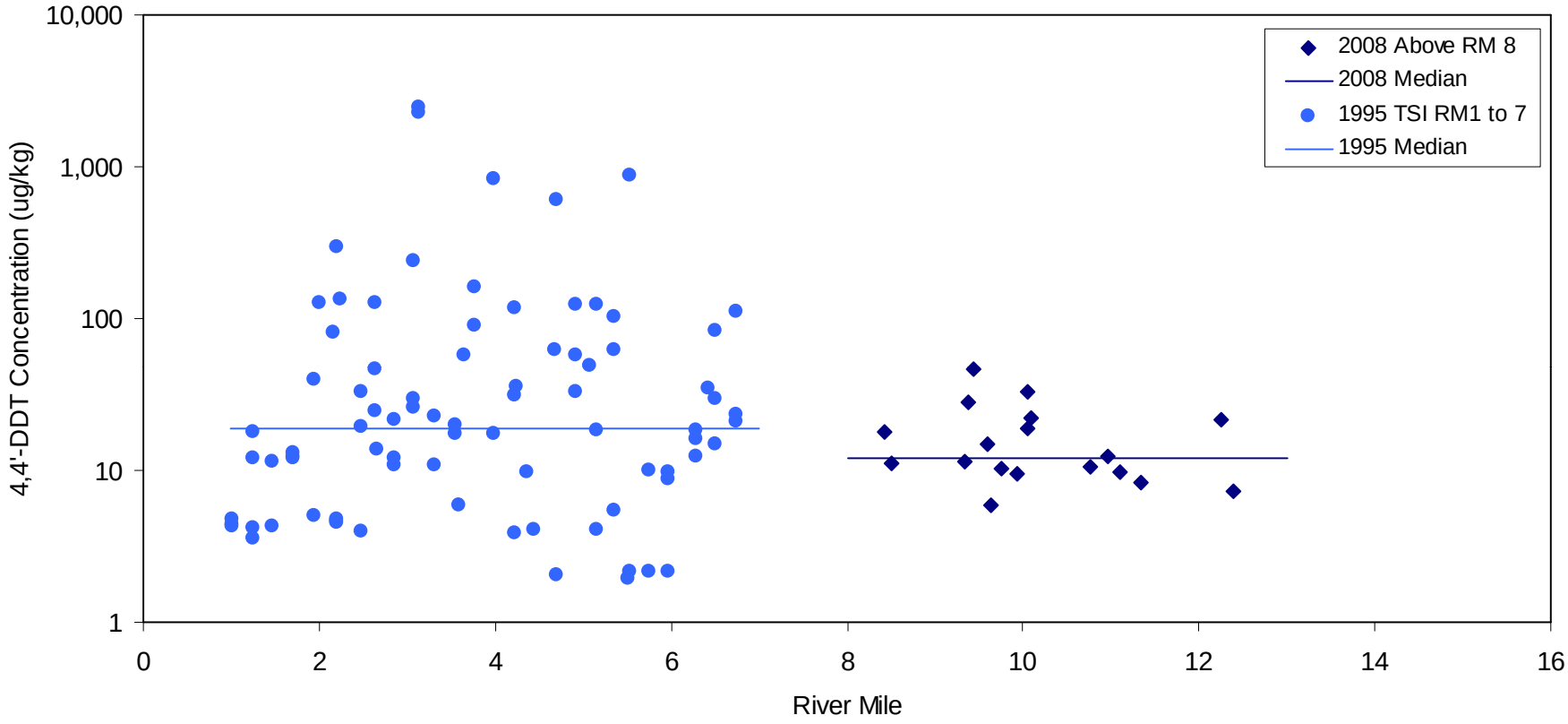
2009



Note:

1. Vertical scale is logarithmic.
2. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

	4,4'-DDE Concentration versus River Mile 0-6 inch Samples EPA 2008 and TSI 1995 Results *Lower Passaic River Restoration Project*	Figure 14-17b 2009



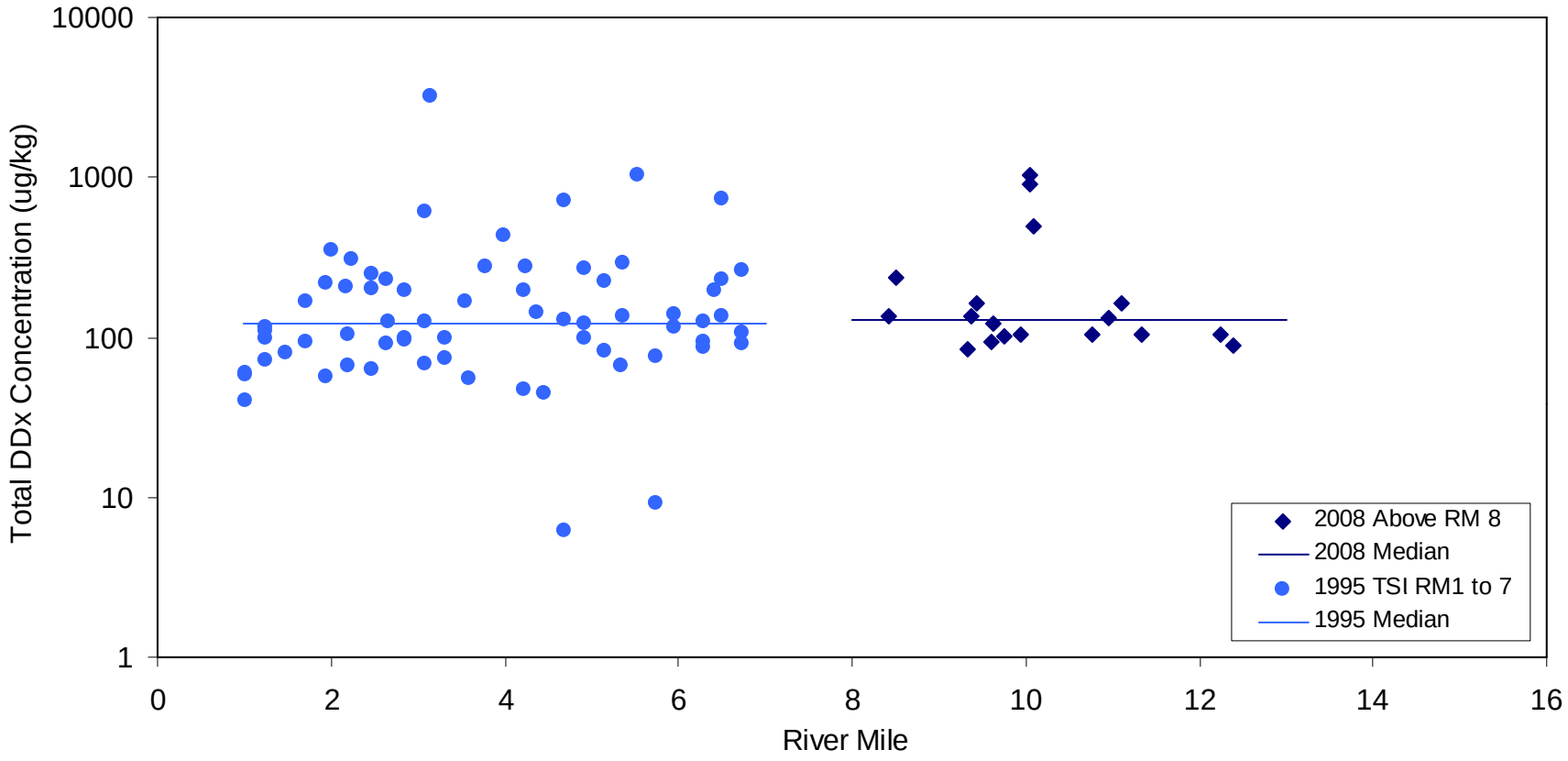
Note:

1. Vertical scale is logarithmic.
2. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

4,4'-DDT Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-17c

2009



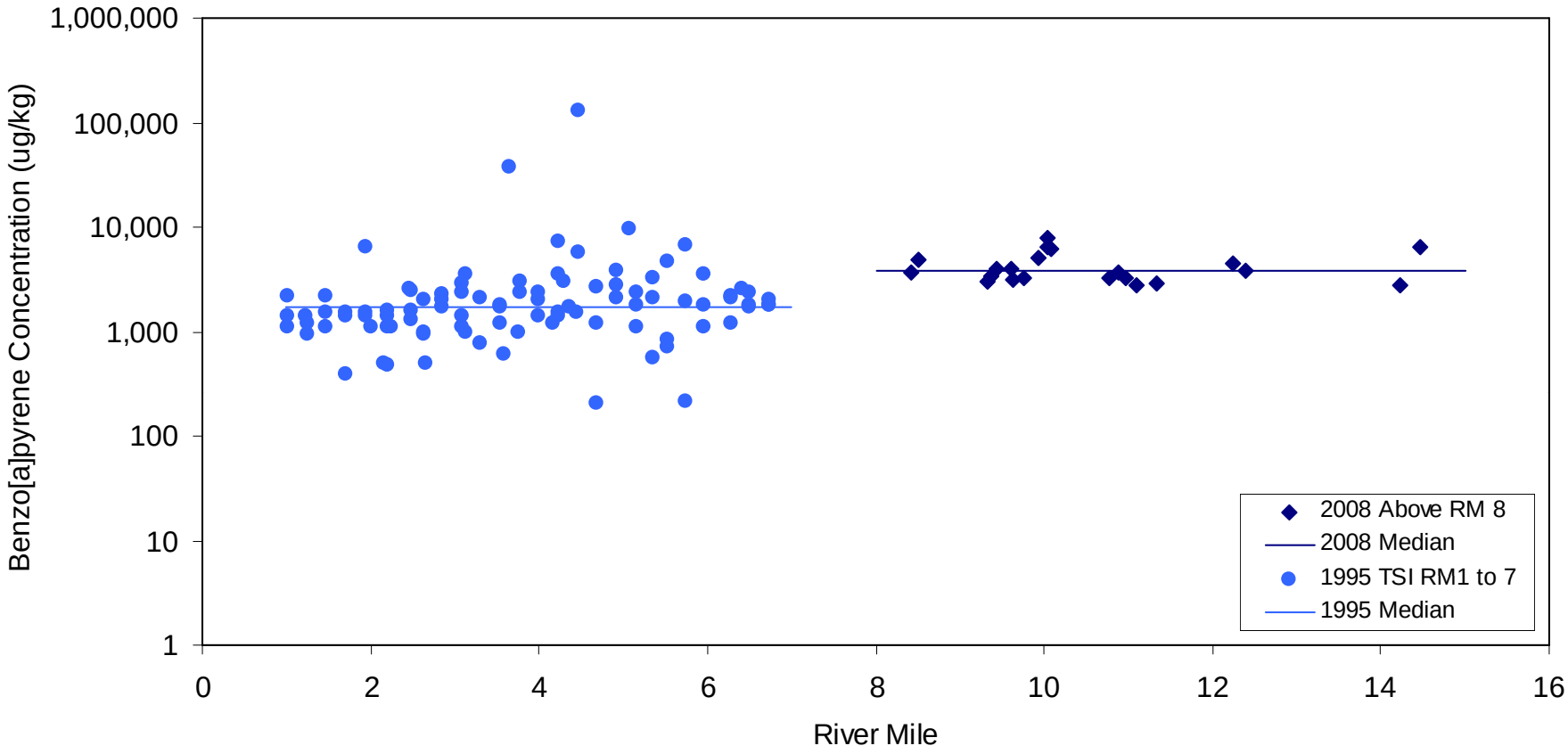
Note:

1. Vertical scale is logarithmic.
2. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

Total DDx Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-17d

2009



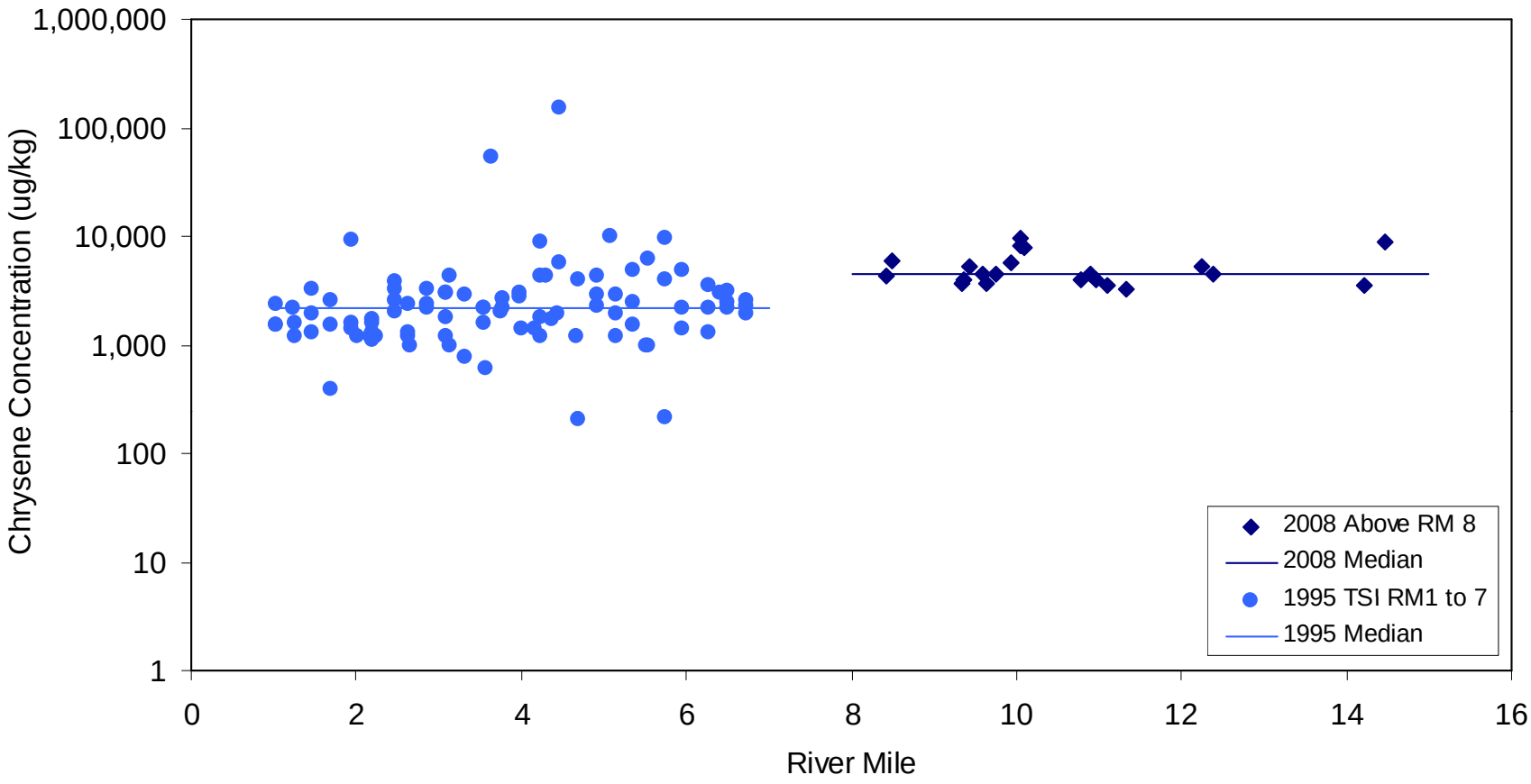
Note:

1. Vertical scale is logarithmic.
2. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

Benzo[a]pyrene Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-18a

2009



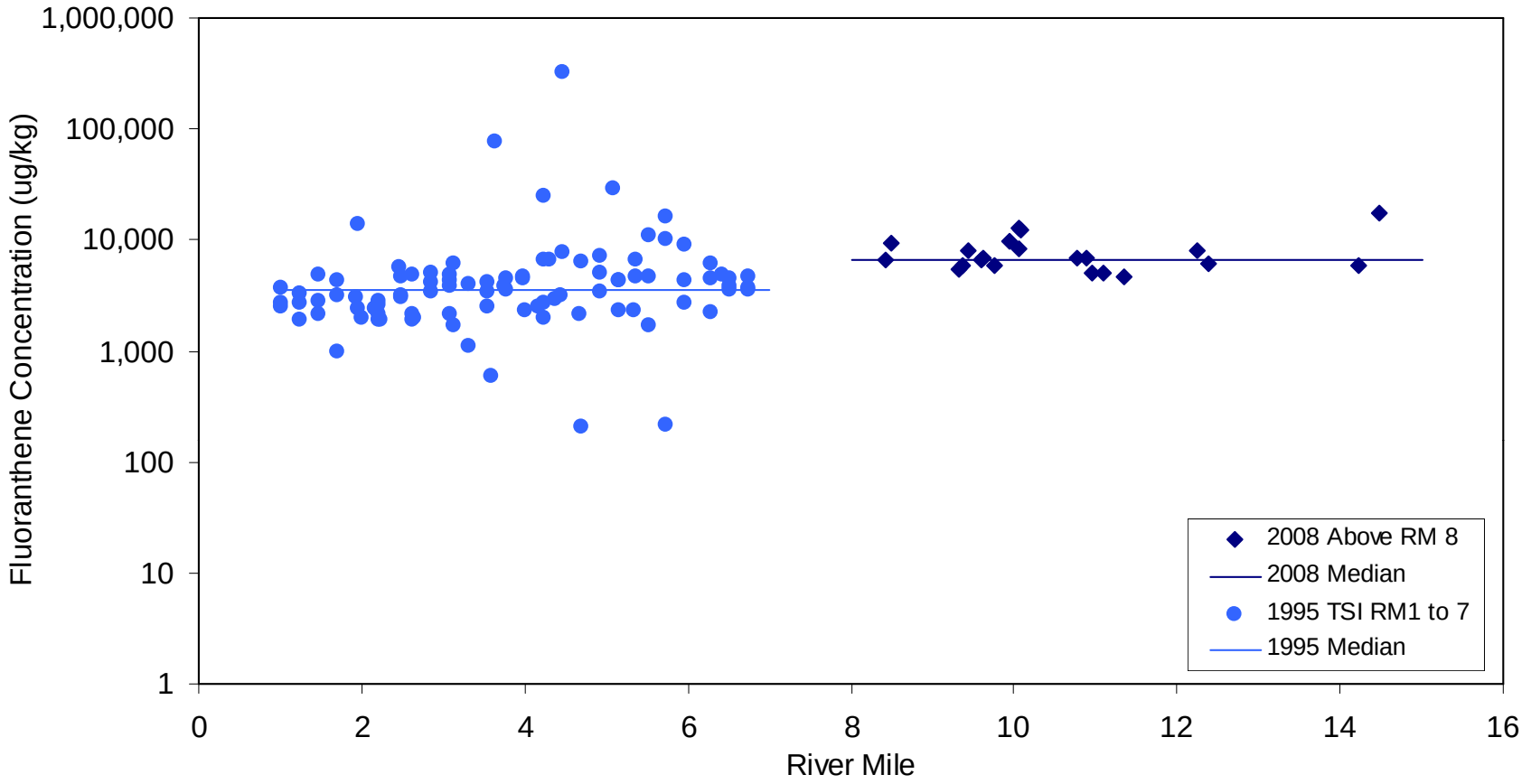
Note:

1. Vertical scale is logarithmic.
2. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

Chrysene Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-18b

2009



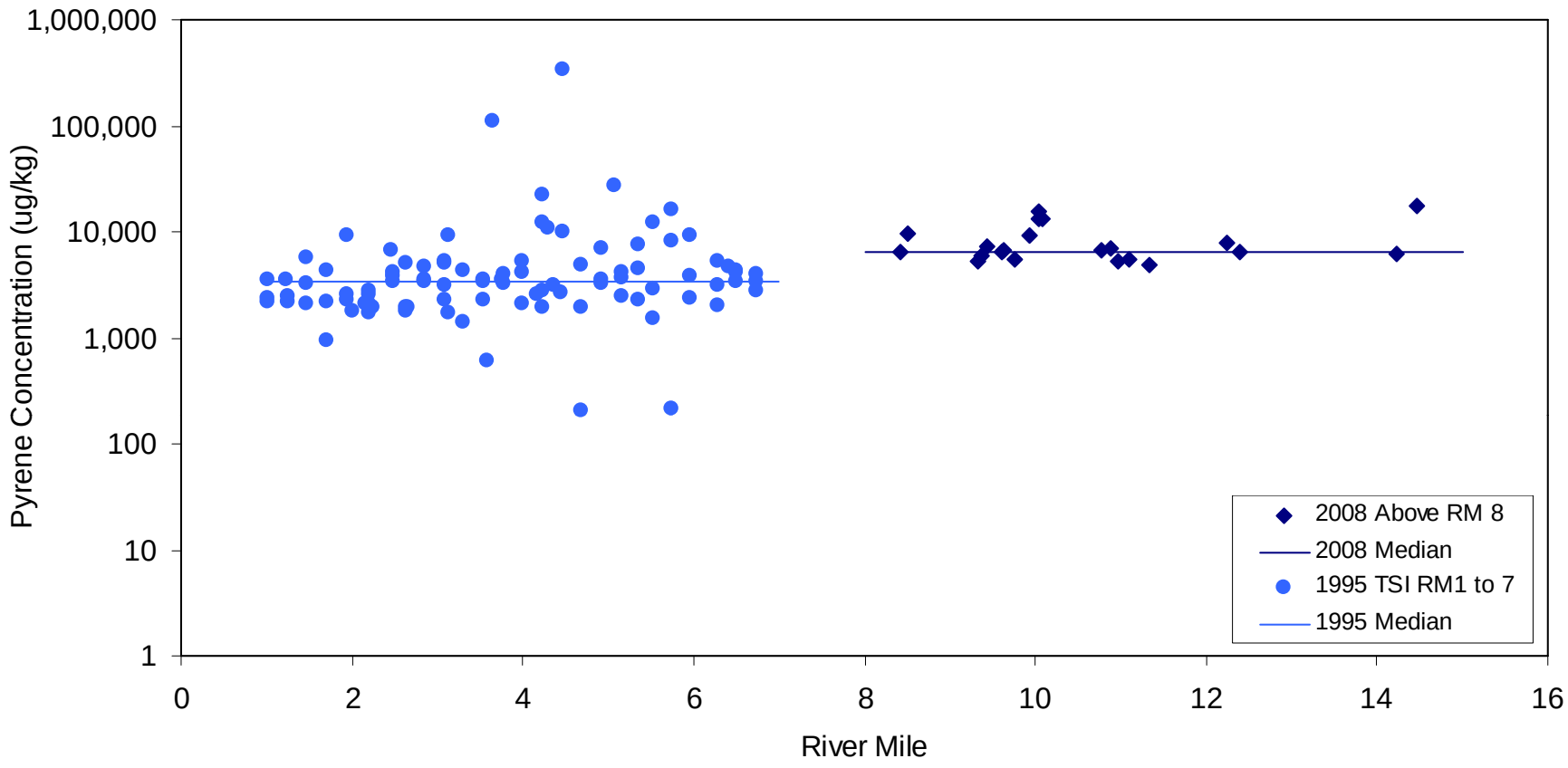
Note:

1. Vertical scale is logarithmic.
2. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

Fluoranthene Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-18c

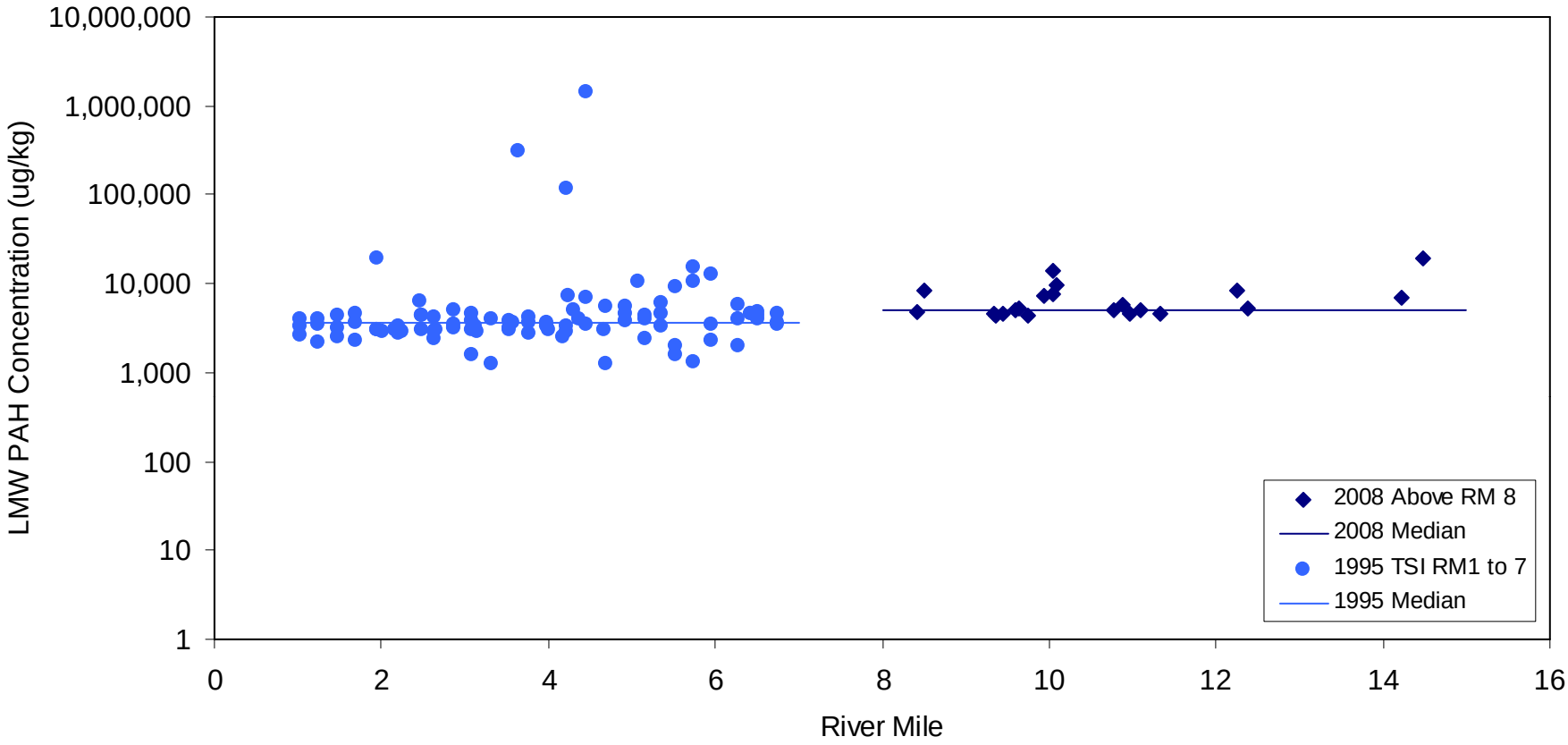
2009



Note:

1. Vertical scale is logarithmic.
2. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

	Pyrene Concentration versus River Mile 0-6 inch Samples EPA 2008 and TSI 1995 Results *Lower Passaic River Restoration Project*	Figure 14-18d 2009



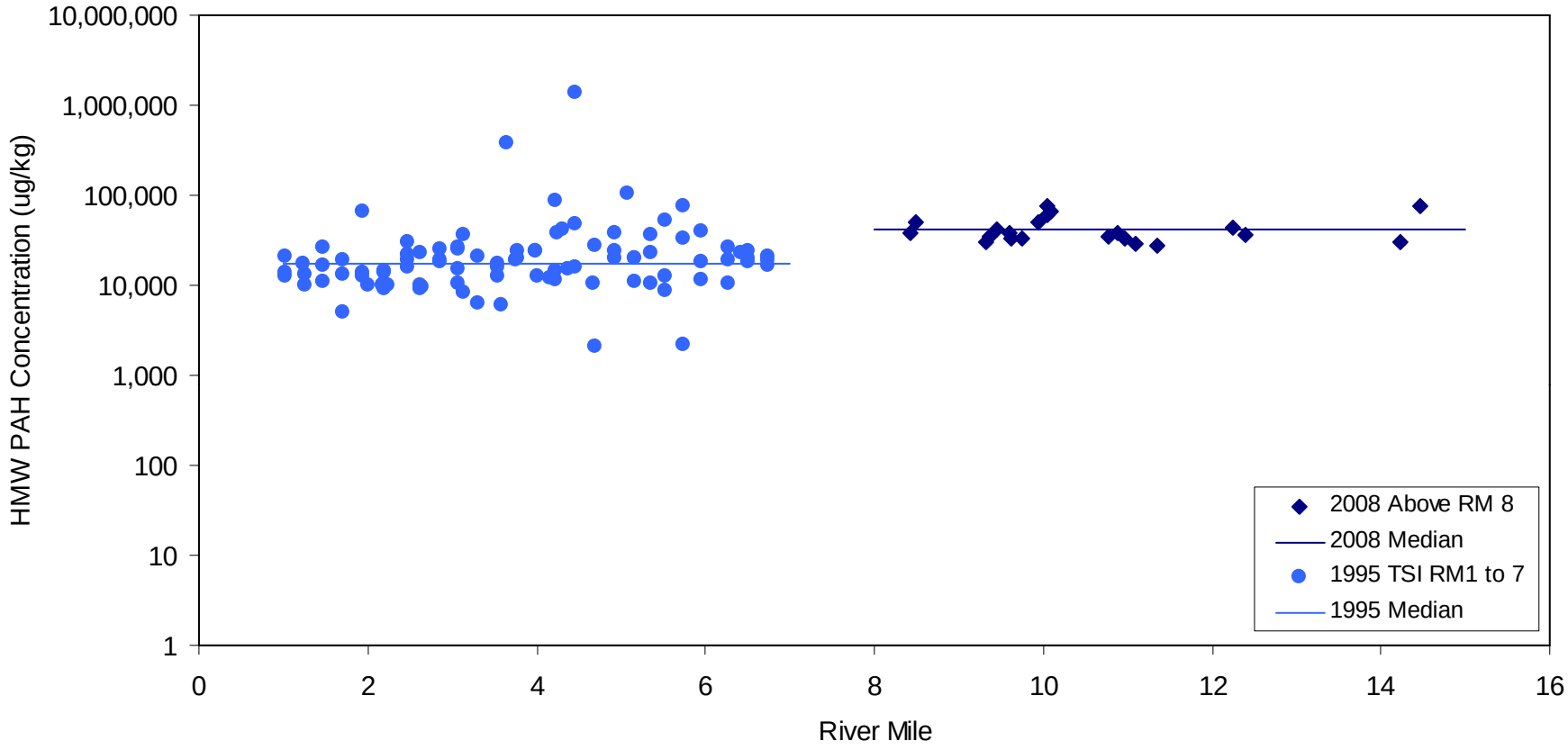
Note:

1. Vertical scale is logarithmic.
2. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

Low Molecular Weight PAHs Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-18e

2009



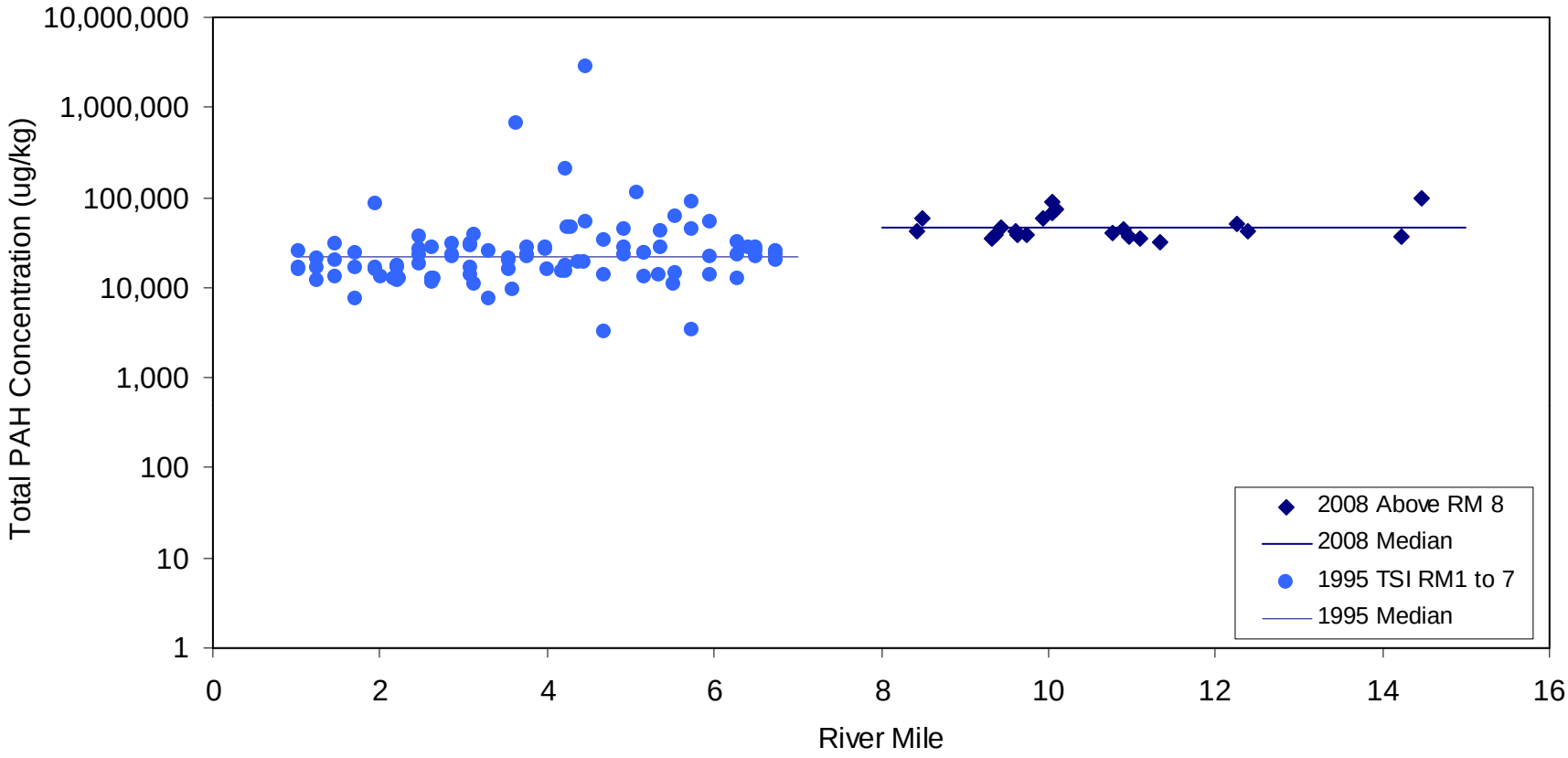
Note:

1. Vertical scale is logarithmic.
2. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

High Molecular Weight PAHs Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-18f

2009



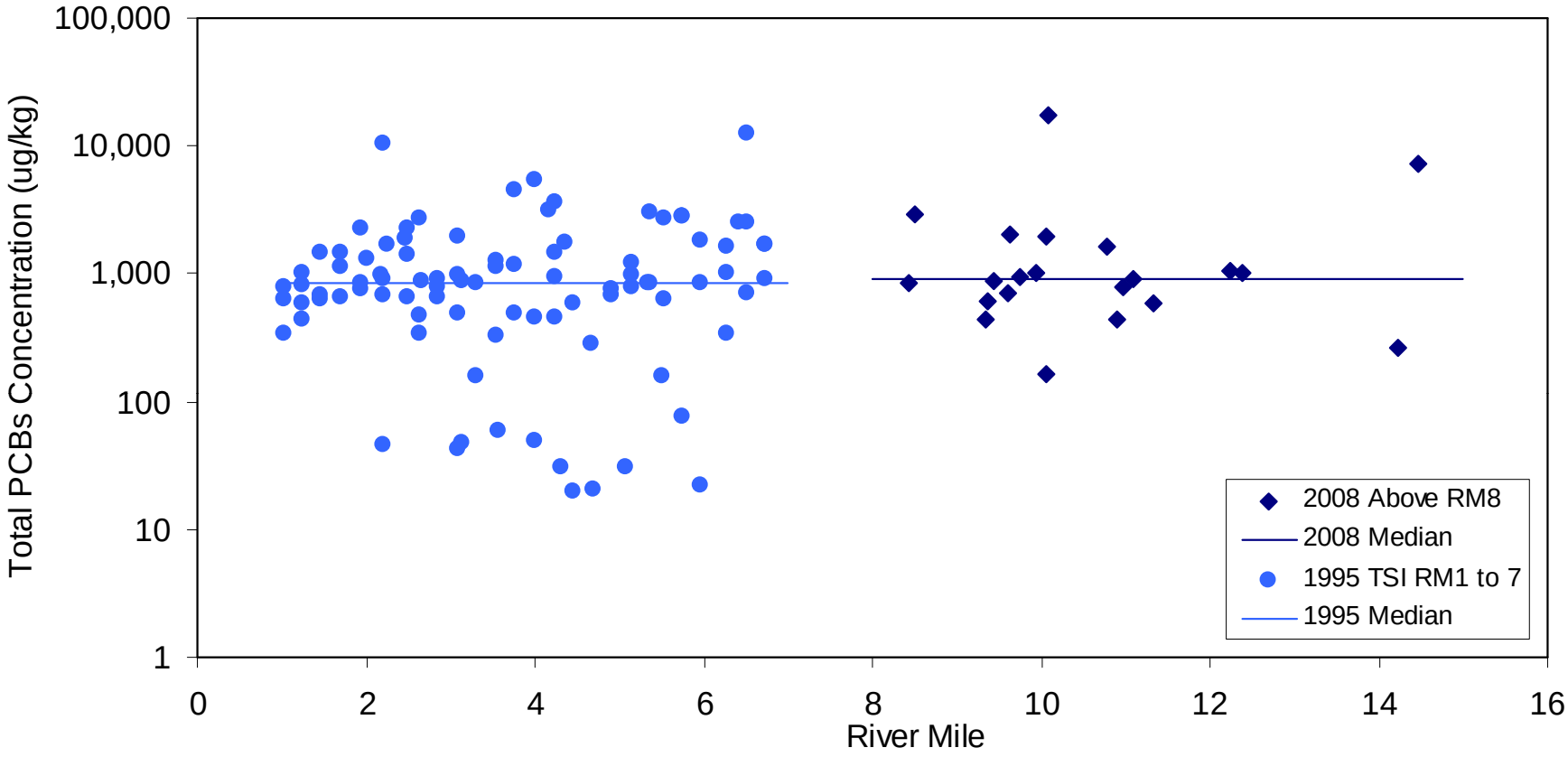
Note:

1. Vertical scale is logarithmic.
2. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

Total PAH Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-18g

2009



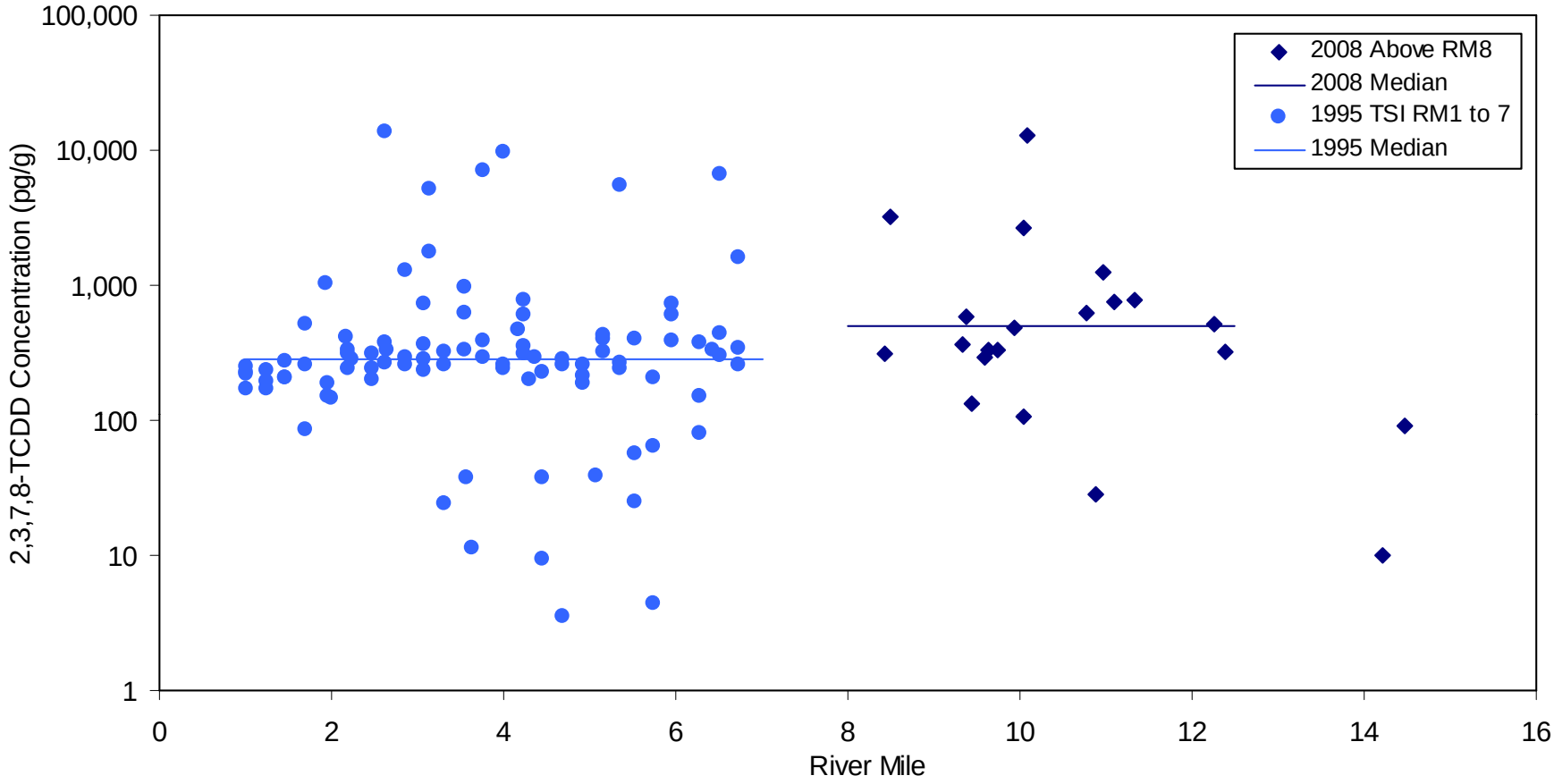
Note:

1. Vertical scale is logarithmic.
2. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

Total PCBs Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-19

2009



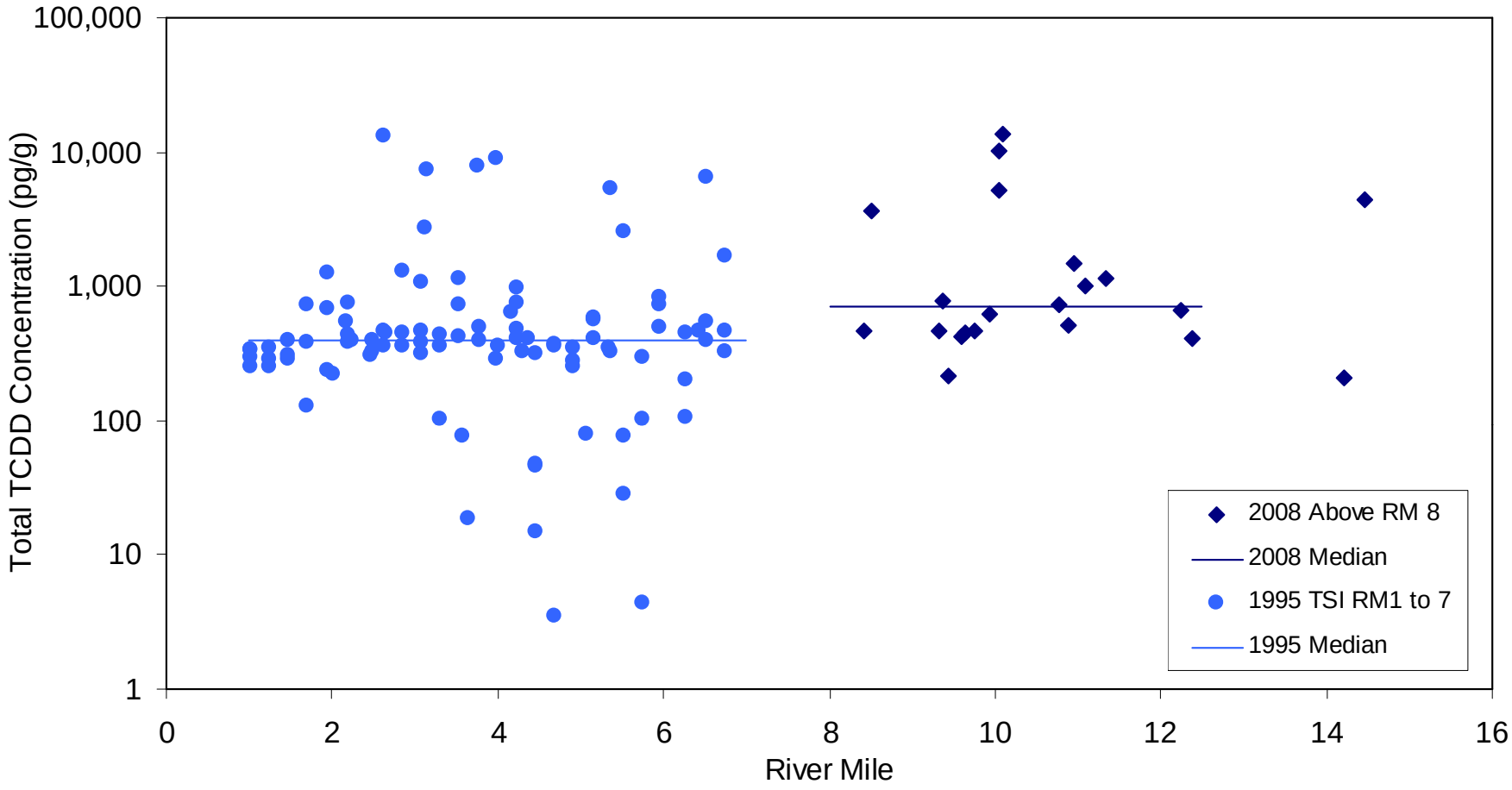
Note:

1. Vertical scale is logarithmic.
2. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

2,3,7,8-TCDD Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-20a

2009



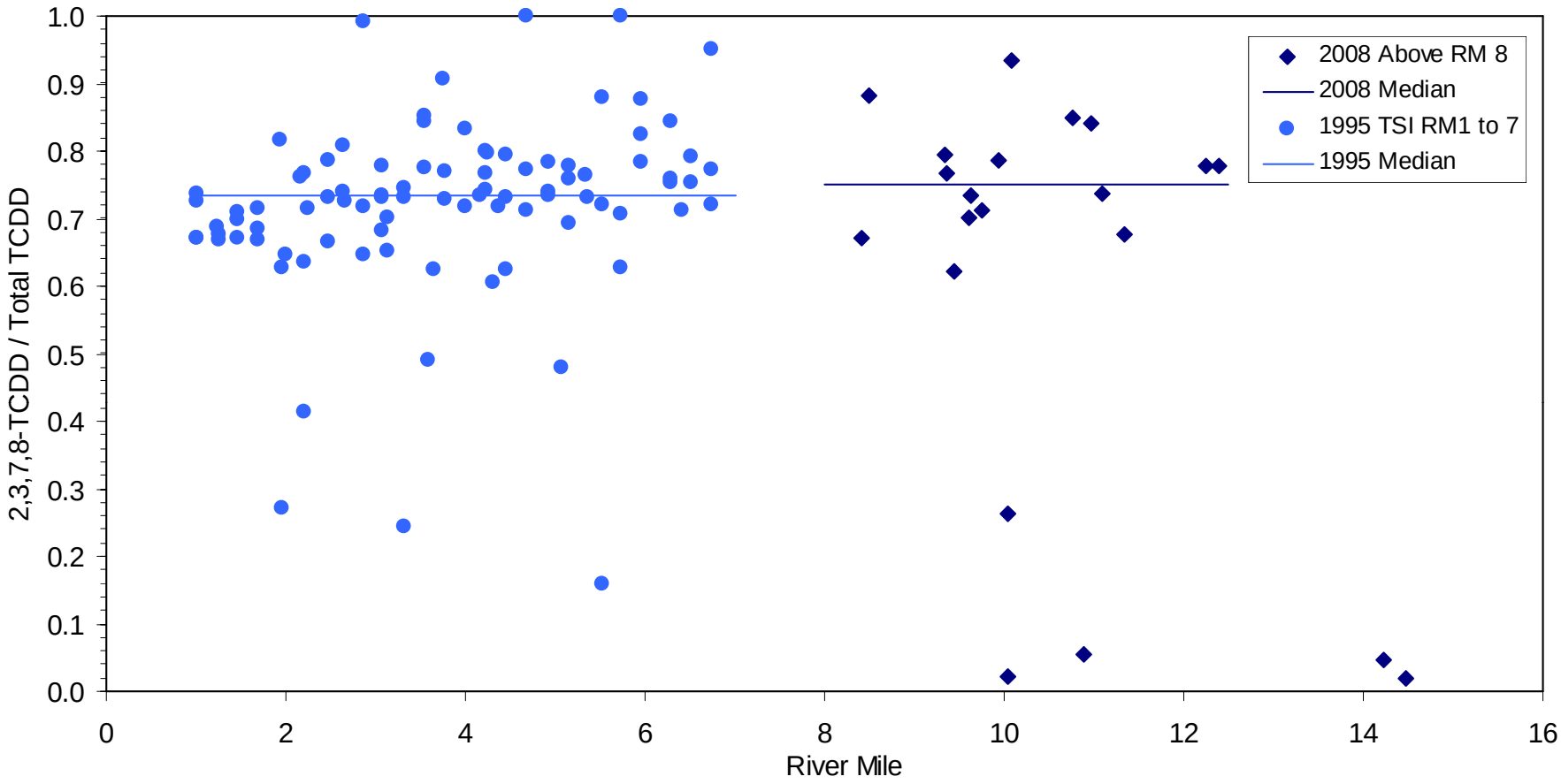
Note:

1. Vertical scale is logarithmic.
2. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

Total TCDD Concentration versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-20b

2009



Note:

1. 2008 EPA samples obtained from silt or silt+sand areas. Greater than 90% of 1995 TSI samples were obtained from silt or silt+sand areas.

2,3,7,8-TCDD/Total TCDD versus River Mile
0-6 inch Samples
EPA 2008 and TSI 1995 Results
Lower Passaic River Restoration Project

Figure 14-20c

2009

Agency Backcheck
Comprehensive Conceptual Site Model
Lower Passaic River Restoration Project

Chapter 15 Figures

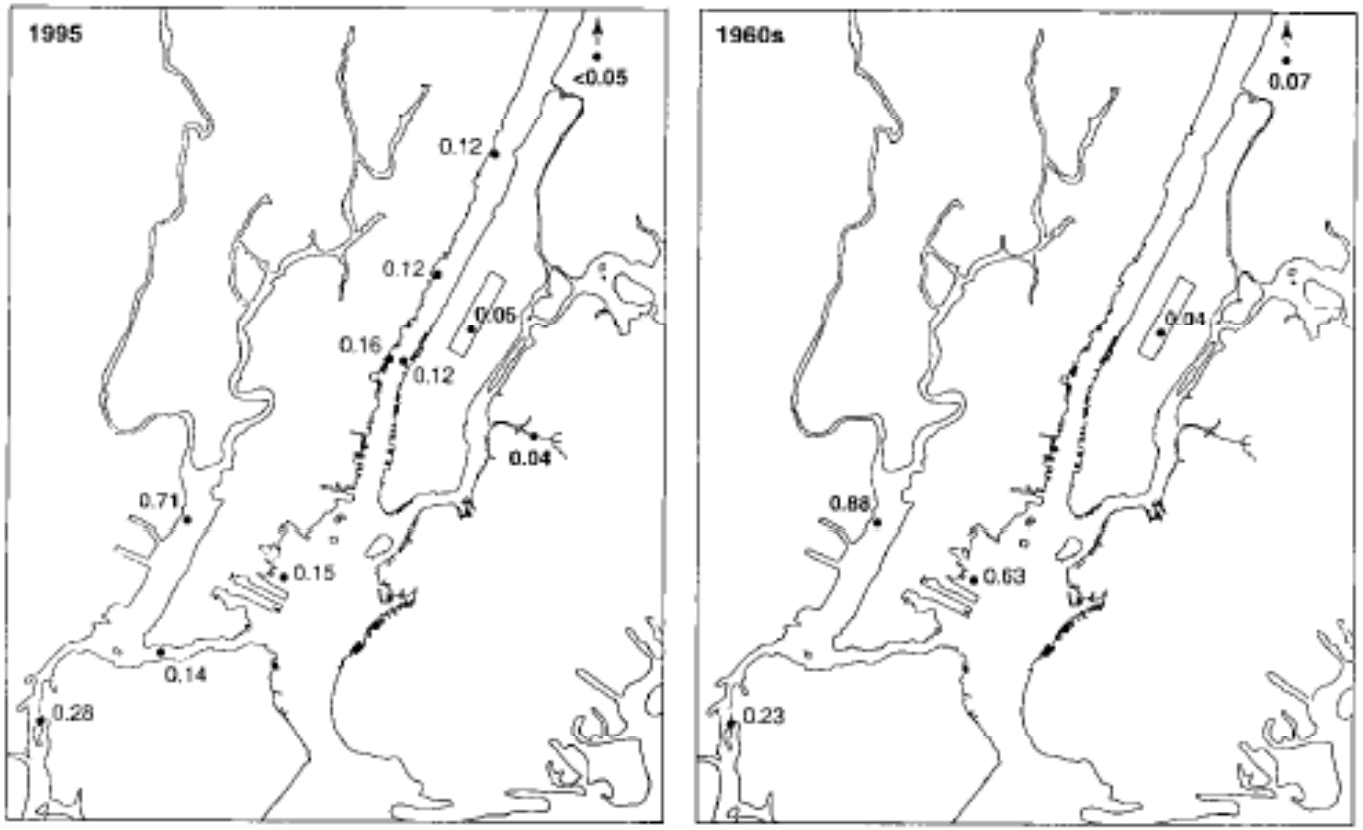
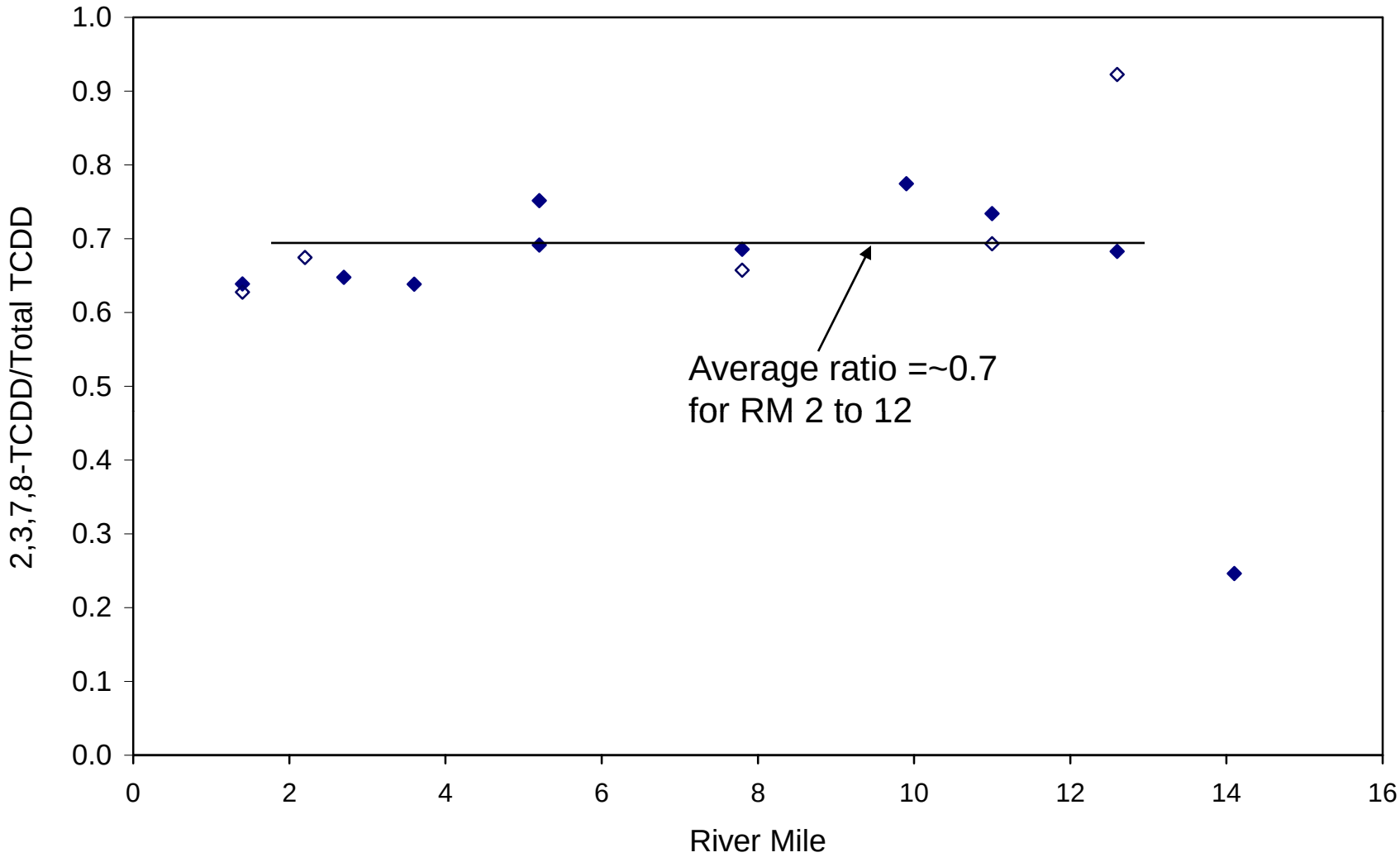


Figure 2.32: 2,3,7,8-TeCDD/ΣTeCDD ratio for harbor sediments deposited in 1995±1 year (left) and in the mid-1960s (right). Data for the mp59.55i "upstream" indicator sample is noted with an arrow at top right. The ratios in atmospheric deposition measured in the Central Park Lake sediments and in "upstream" sediment delivery measured in the mp59.55i core are low in both time periods. The influence of the Western Harbor (80 Lister Avenue) source on Harbor sediments was much stronger in the 1960s, but is still responsible for ca. 50% of 2,3,7,8-TeCDD in recent deposition.

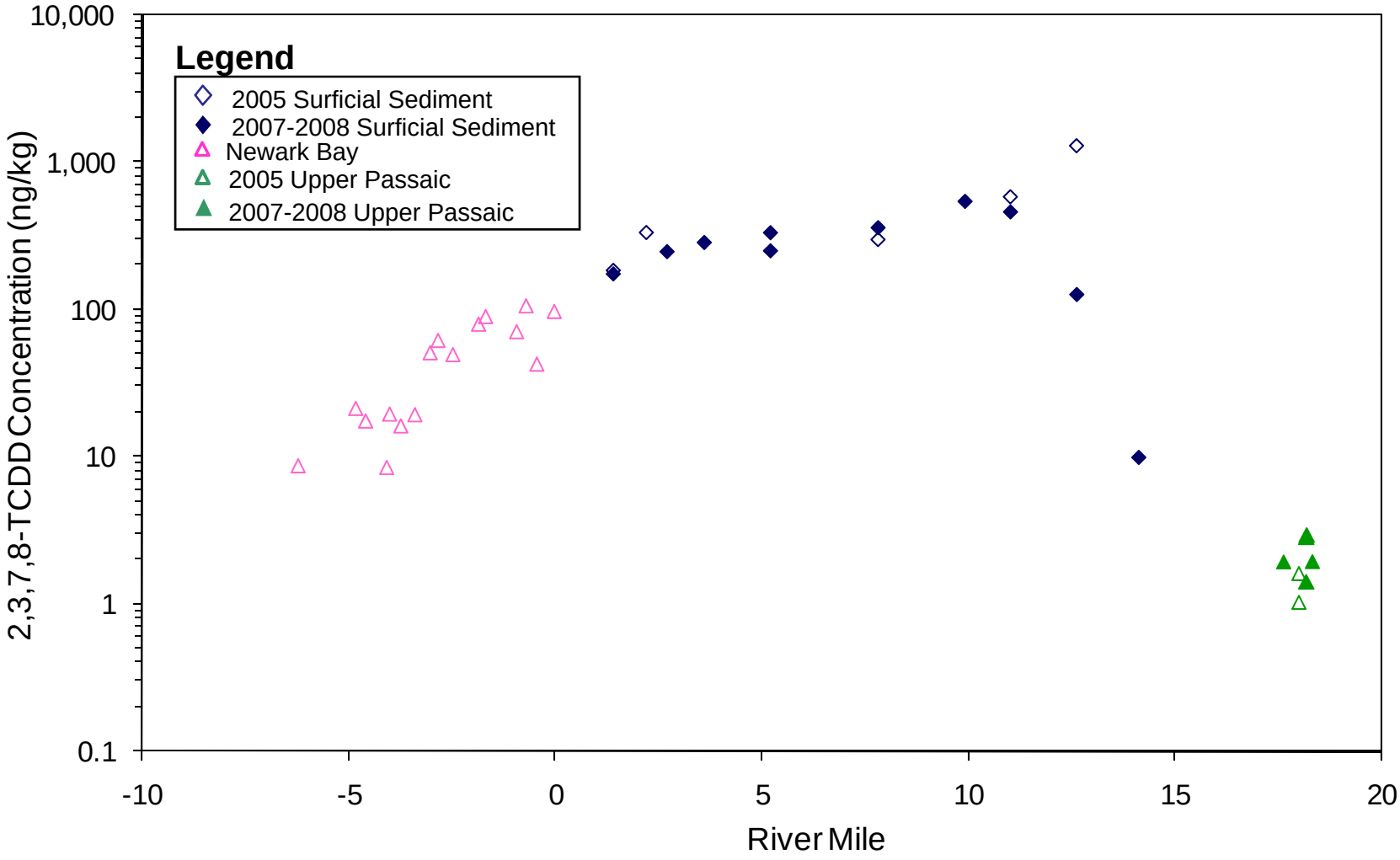


2,3,7,8-TCDD to Total TCDD Ratio
2005-2008 Surface Sediment

Lower Passaic River Restoration Project

Figure 15-2

2009

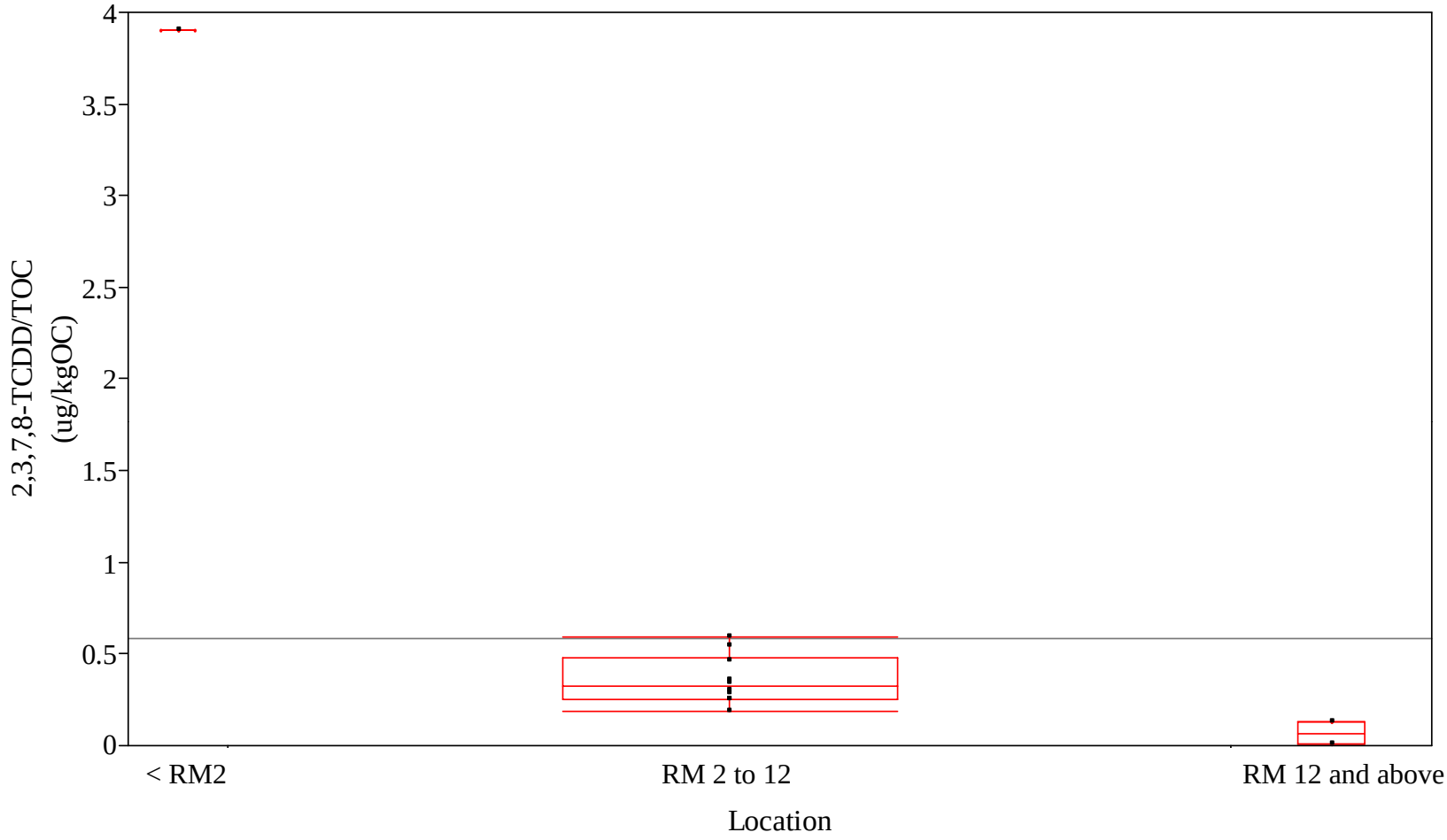


2,3,7,8-TCDD Concentration vs River Mile
Newark Bay, Lower Passaic and Upper Passaic

Lower Passaic River Restoration Project

Figure 15-3

2009

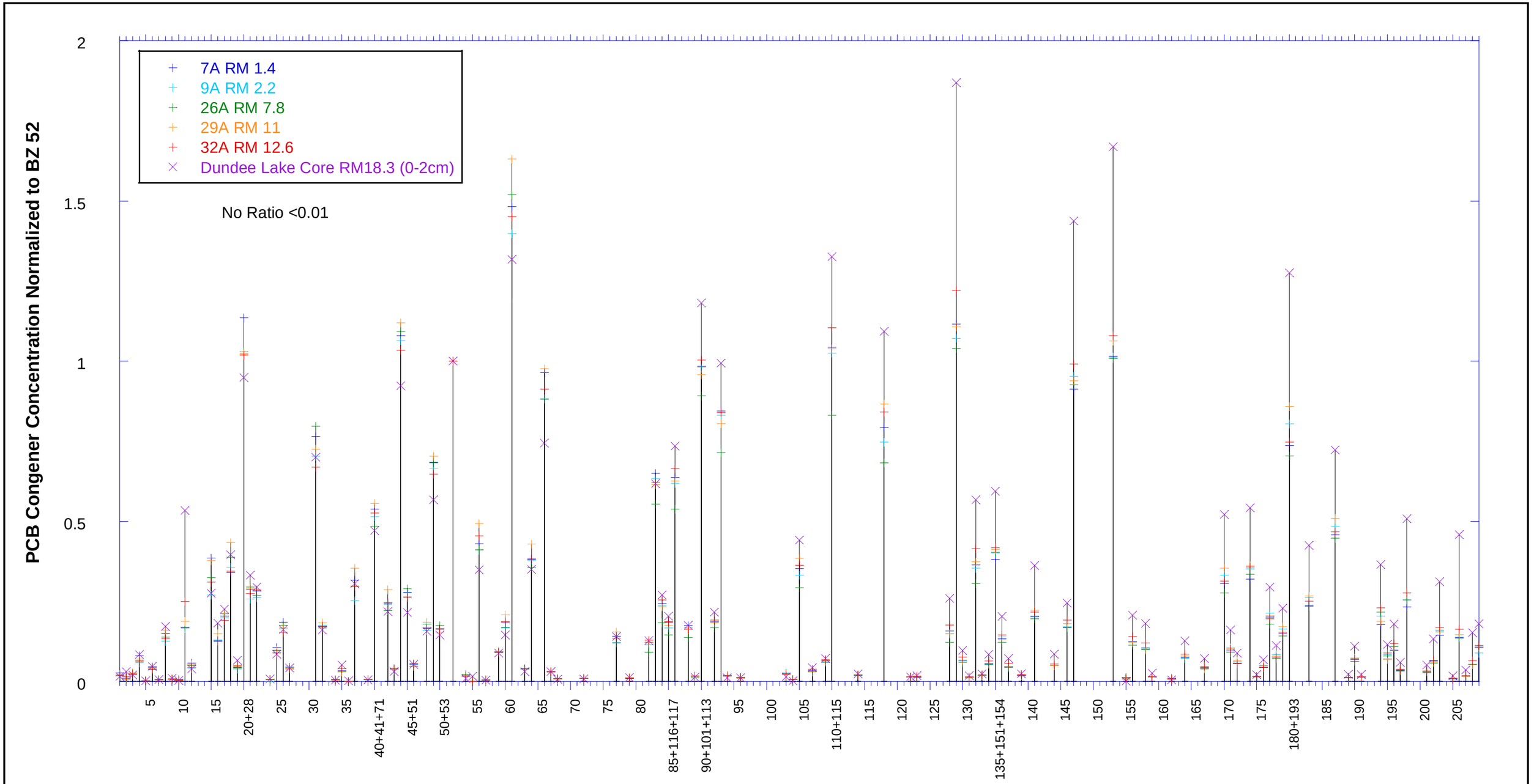


TOC Normalized 2,3,7,8-TCDD Concentration in the Lower Passaic River Surficial Sediment

Lower Passaic River Restoration Project

Figure 15-4

2009



US Army Corps of Engineers®

PCB Congener Concentration Normalized to Congener 52 Pattern for Dundee Dam and Lower Passaic Surface Sediment

Lower Passaic River Restoration Project

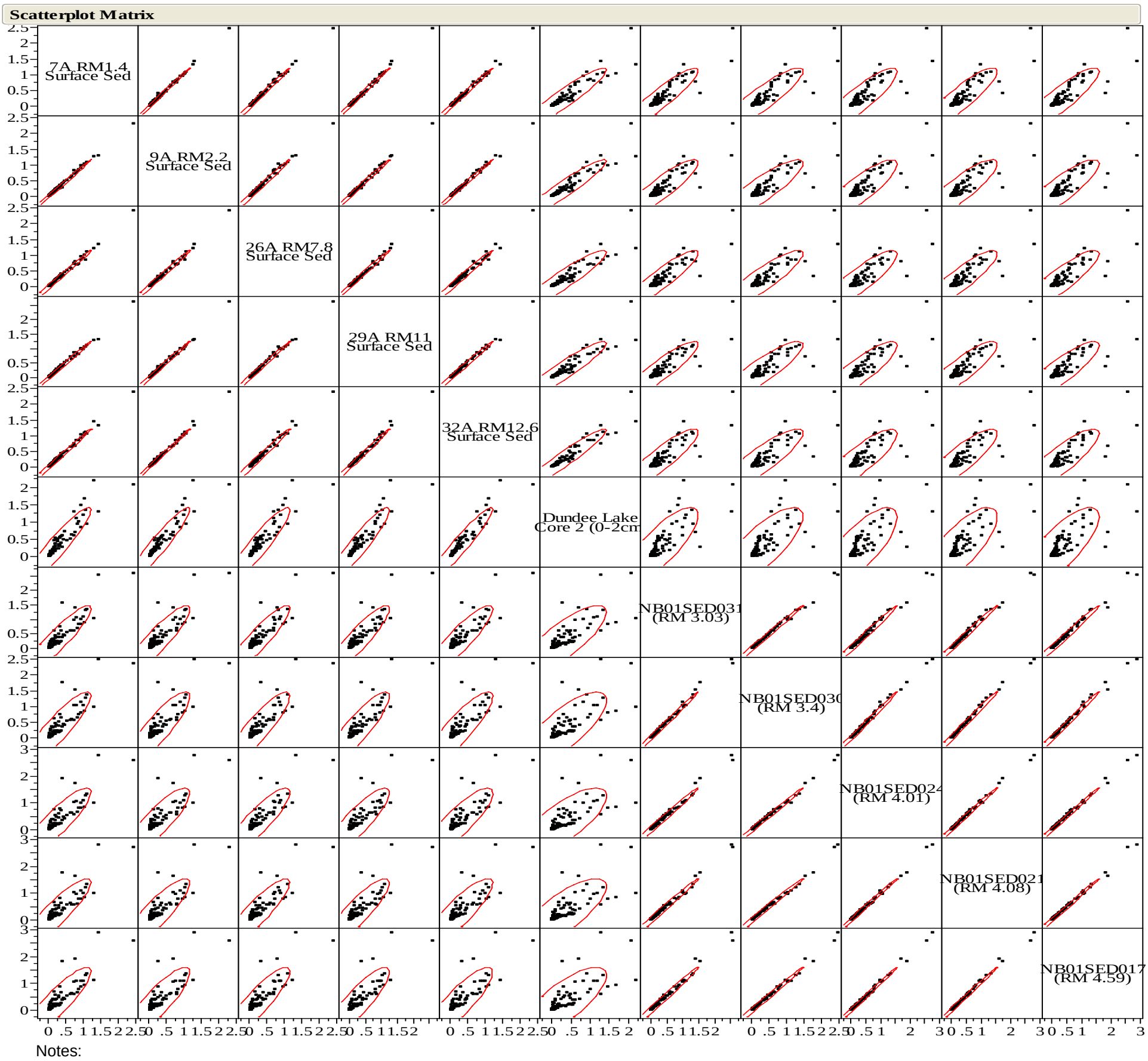
Figure 15-5

2009

Multivariate Correlations

	7A RM1.4 Surface Sediment	9A RM2.2 Surface Sediment	26A RM7.8 Surface Sediment	29A RM11 Surface Sediment	32A RM12.6 Surface Sediment	Dundee Dam (0-2cm)	NB01SED031 (RM-3.0)	NB01SED030 (RM-3.4)	NB01SED024 (RM-4.0)	NB01SED021 (RM-4.1)	NB01SED017 (RM-4.6)
7A RM1.4 Surface Sediment	1.0000	0.9979	0.9964	0.9973	0.9967	0.9348	0.9167	0.8917	0.8755	0.8862	0.8802
9A RM2.2 Surface Sediment	0.9979	1.0000	0.9951	0.9968	0.9977	0.9467	0.8973	0.8710	0.8524	0.8629	0.8575
26A RM7.8 Surface Sediment	0.9964	0.9951	1.0000	0.9962	0.9922	0.9291	0.9119	0.8873	0.8718	0.8845	0.8774
29A RM11 Surface Sediment	0.9973	0.9968	0.9962	1.0000	0.9954	0.9346	0.9046	0.8787	0.8614	0.8731	0.8650
32A RM12.6 Surface Sediment	0.9967	0.9977	0.9922	0.9954	1.0000	0.9555	0.8931	0.8658	0.8467	0.8573	0.8525
Dundee Dam (0-2cm)	0.9348	0.9467	0.9291	0.9346	0.9555	1.0000	0.8000	0.7711	0.7475	0.7531	0.7582
NB01SED031 (RM-3.0)	0.9167	0.8973	0.9119	0.9046	0.8931	0.8000	1.0000	0.9965	0.9943	0.9952	0.9938
NB01SED030 (RM-3.4)	0.8917	0.8710	0.8873	0.8787	0.8658	0.7711	0.9965	1.0000	0.9972	0.9961	0.9965
NB01SED024 (RM-4.0)	0.8755	0.8524	0.8718	0.8614	0.8467	0.7475	0.9943	0.9972	1.0000	0.9978	0.9980
NB01SED021 (RM-4.1)	0.8862	0.8629	0.8845	0.8731	0.8573	0.7531	0.9952	0.9961	0.9978	1.0000	0.9976
NB01SED017 (RM-4.6)	0.8802	0.8575	0.8774	0.8650	0.8525	0.7582	0.9938	0.9965	0.9980	0.9976	1.0000

Scatterplot Matrix



Notes:

1. In this presentation, river miles for the Newark Bay sampling locations are assigned with respect to the distance from the mouth of the Lower Passaic River (RM0.0) and following the federal navigation channel.
2. PCB Congeners Concentration Normalized to Congener 52

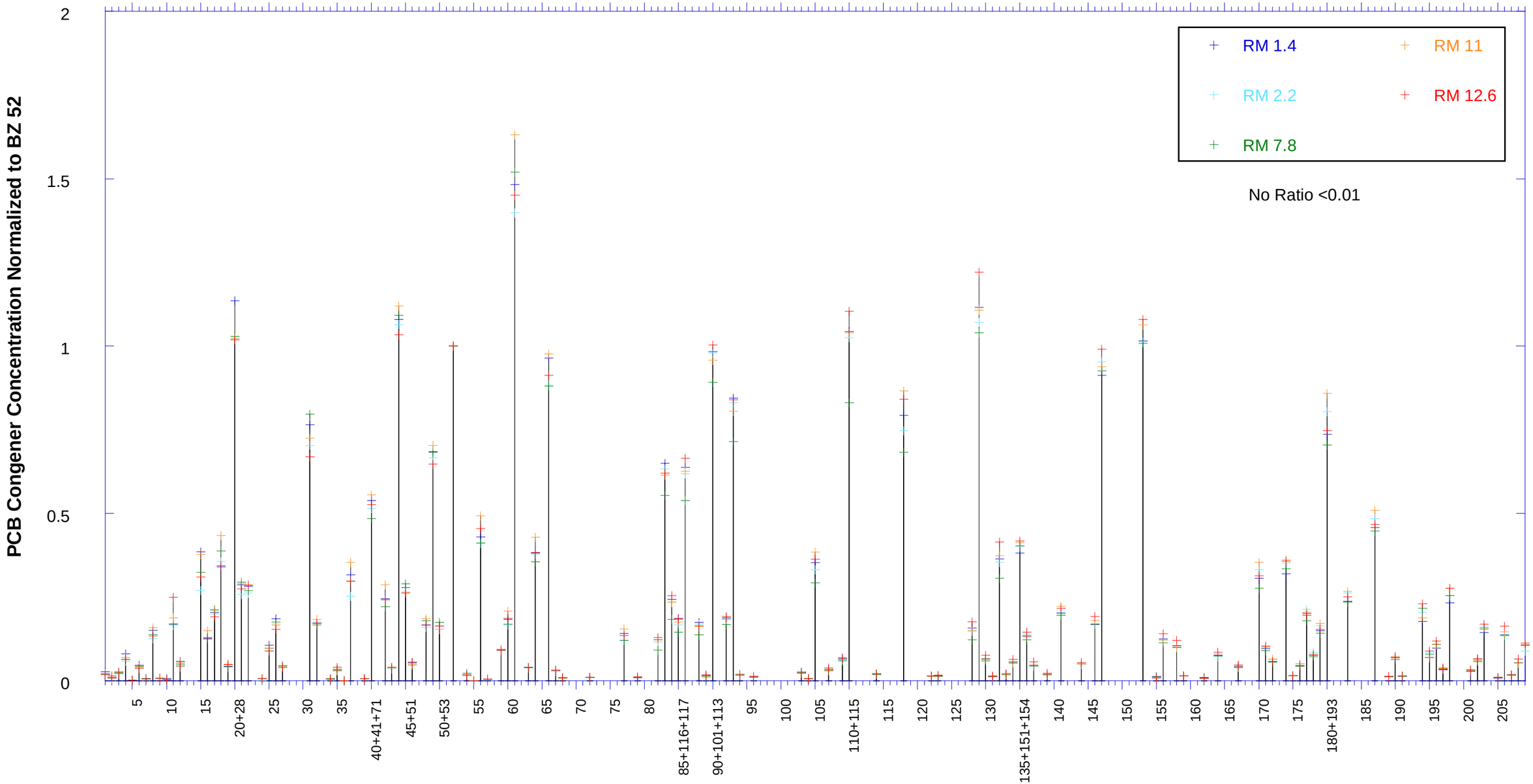
US Army Corps of Engineers®

Correlation Among Sampling Locations for PCB Congeners in Dundee Dam, Lower Passaic River, and Newark Bay Surface Sediment

Lower Passaic River Restoration Project

Figure 15-6

2009



PCB Congener Concentration Normalized to Congener 52 Pattern for the Lower Passaic River High Resolution Cores Surface Sediment

Lower Passaic River Restoration Project

Figure 15-7

2009

3/22/2007 8:50AM

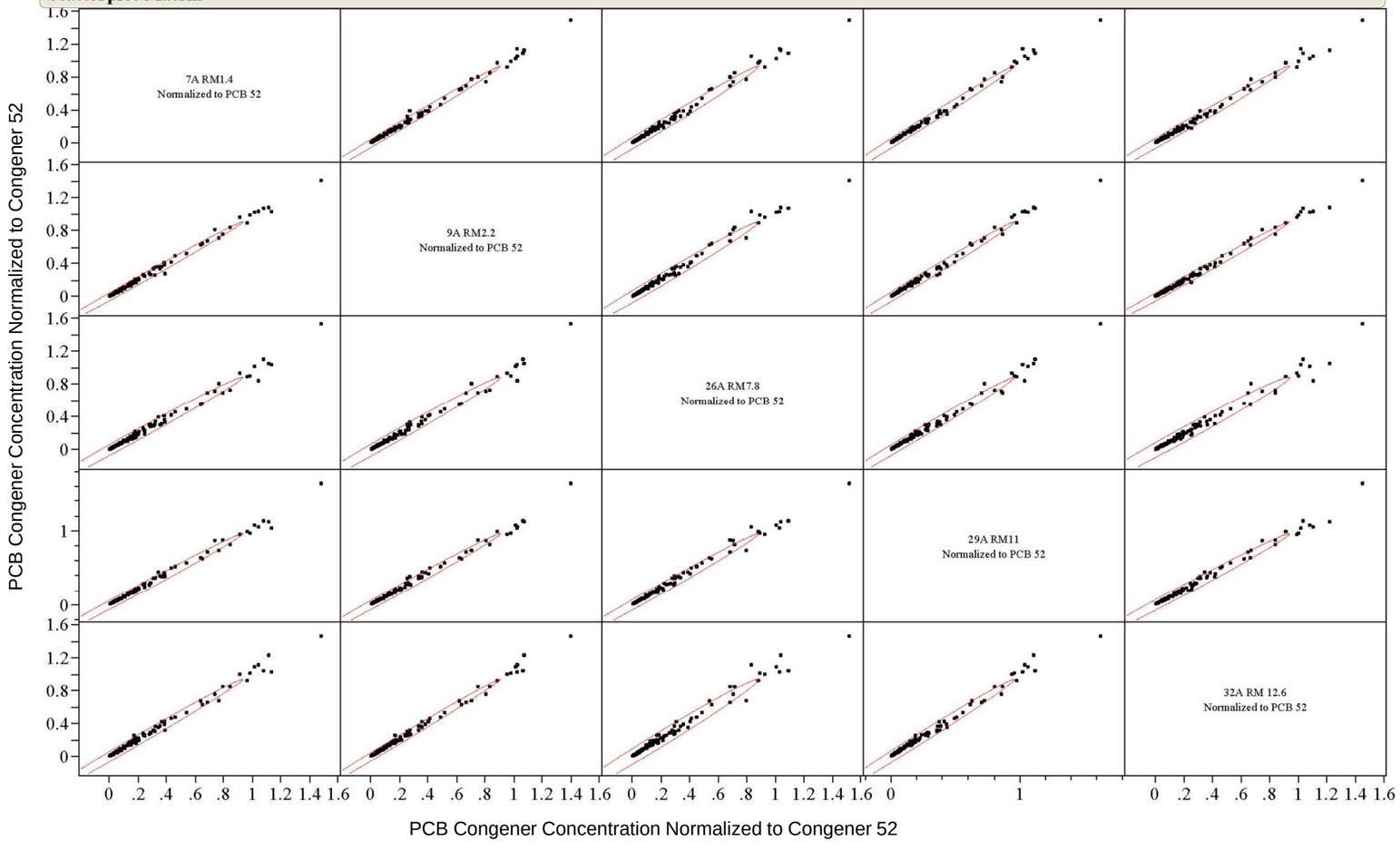
Multivariate LPR High Res Core Tops All Data

Correlations

	7A RM1.4 Normalized to PCB 52	9A RM2.2 Normalized to PCB 52	26A RM7.8 Normalized to PCB 52	29A RM11 Normalized to PCB 52	32A RM 12.6 Normalized to PCB 52
7A RM1.4 Normalized to PCB 52	1.0000	0.9975	0.9950	0.9965	0.9963
9A RM2.2 Normalized to PCB 52	0.9975	1.0000	0.9940	0.9963	0.9974
26A RM7.8 Normalized to PCB 52	0.9950	0.9940	1.0000	0.9953	0.9908
29A RM11 Normalized to PCB 52	0.9965	0.9963	0.9953	1.0000	0.9951
32A RM 12.6 Normalized to PCB 52	0.9963	0.9974	0.9908	0.9951	1.0000

24 rows not used due to missing or excluded values or frequency or weight variables missing, negative or less than one.

Scatterplot Matrix



Legend

- PCB Congeners Concentration Normalized to Congener 52

Notes

Identification numbers 7A, 9A, 26A, 29A, and 32A correspond to field location numbers of 2005 USEPA High Resolution Sediment Cores.

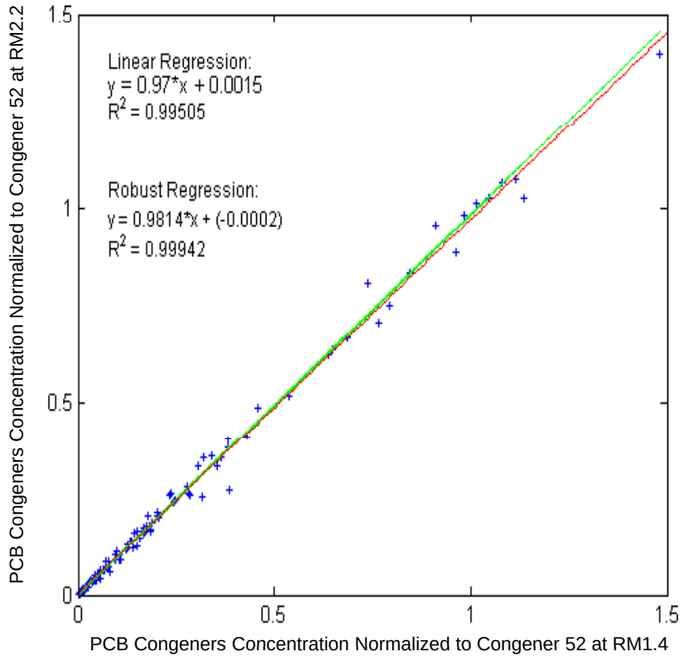
Data Source: USEPA 2005 High Resolution Sediment Coring Program collected by Malcolm Pirnie, Inc.

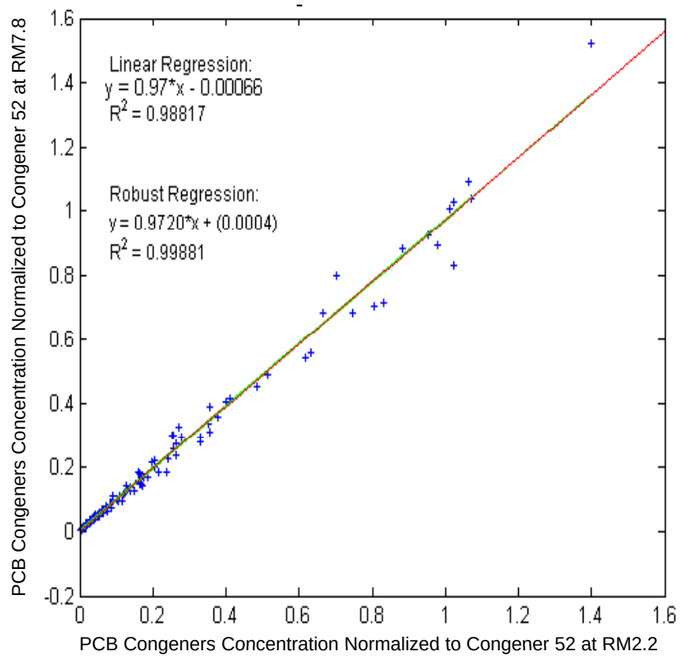
Correlation Among Sampling Locations for PCB Congeners of the Lower Passaic River High Resolution Cores Surface Sediments

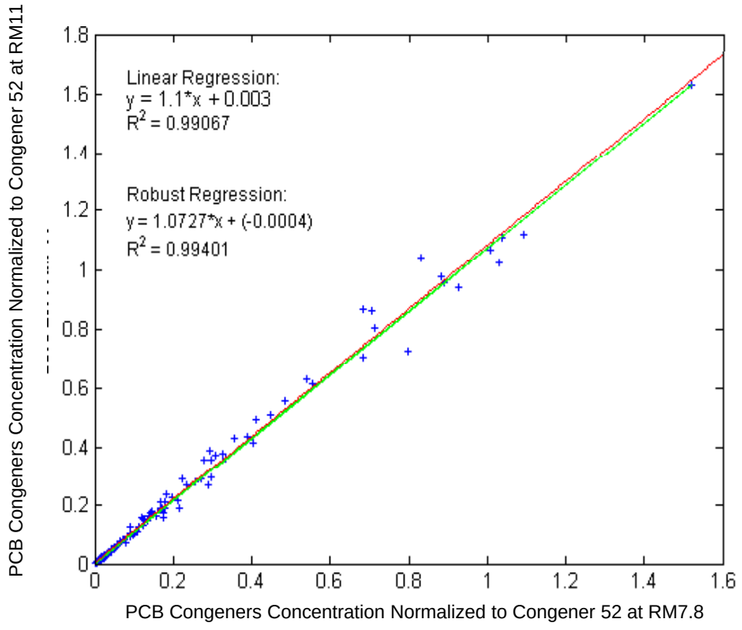
Lower Passaic River Restoration Project

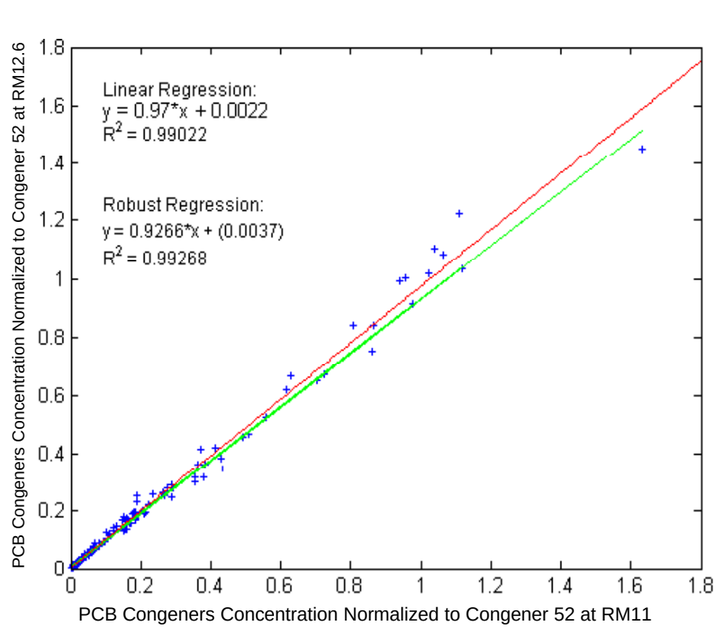
Figure 15-8

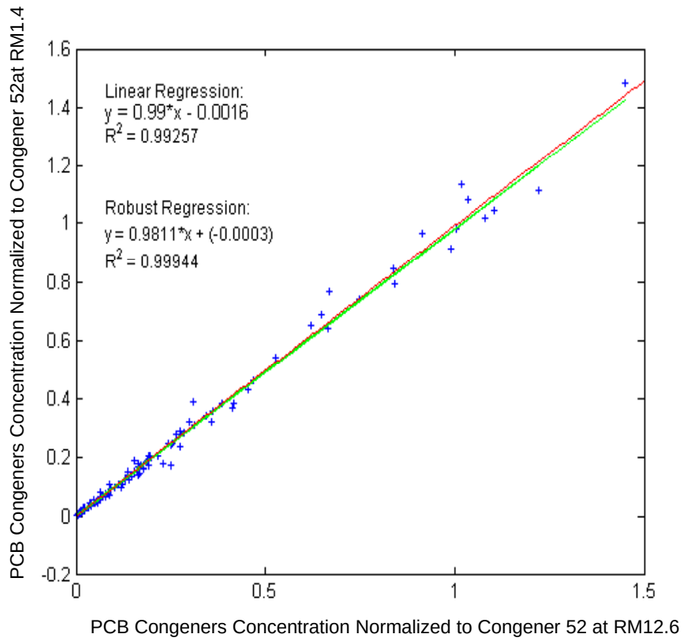
2009











Legend

- PCB Congeners Concentration Normalized to Congener 52
- Linear Regression
- Robust Regression

Notes

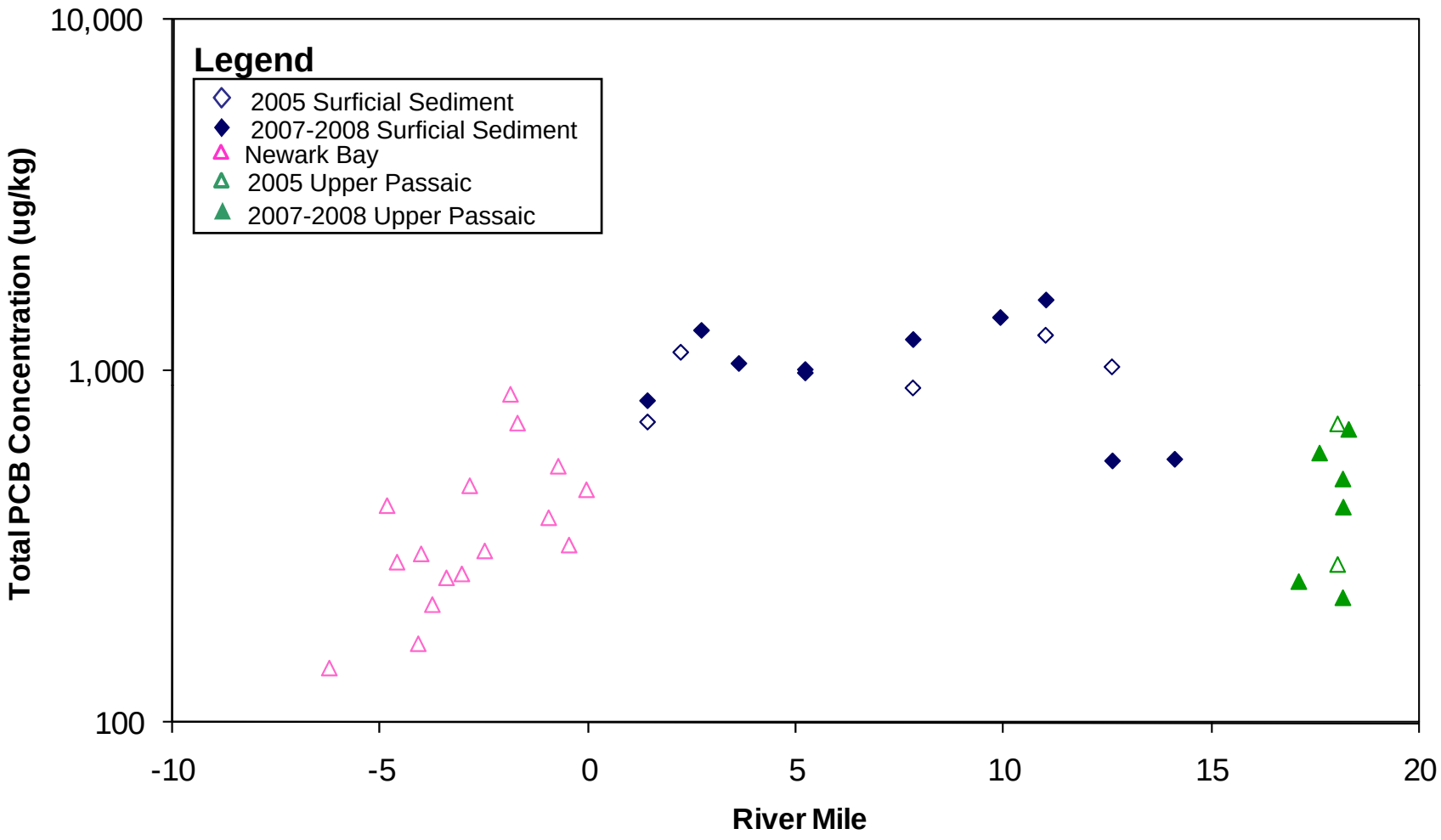
US Army Corp of Engineers®

Linear and Robust Regression for PCB Congeners Concentration Normalized to Congener 52 in the Lower Passaic River High Resolution Core Surface Sediments

Lower Passaic River Restoration Project

Figure 15-9

2009

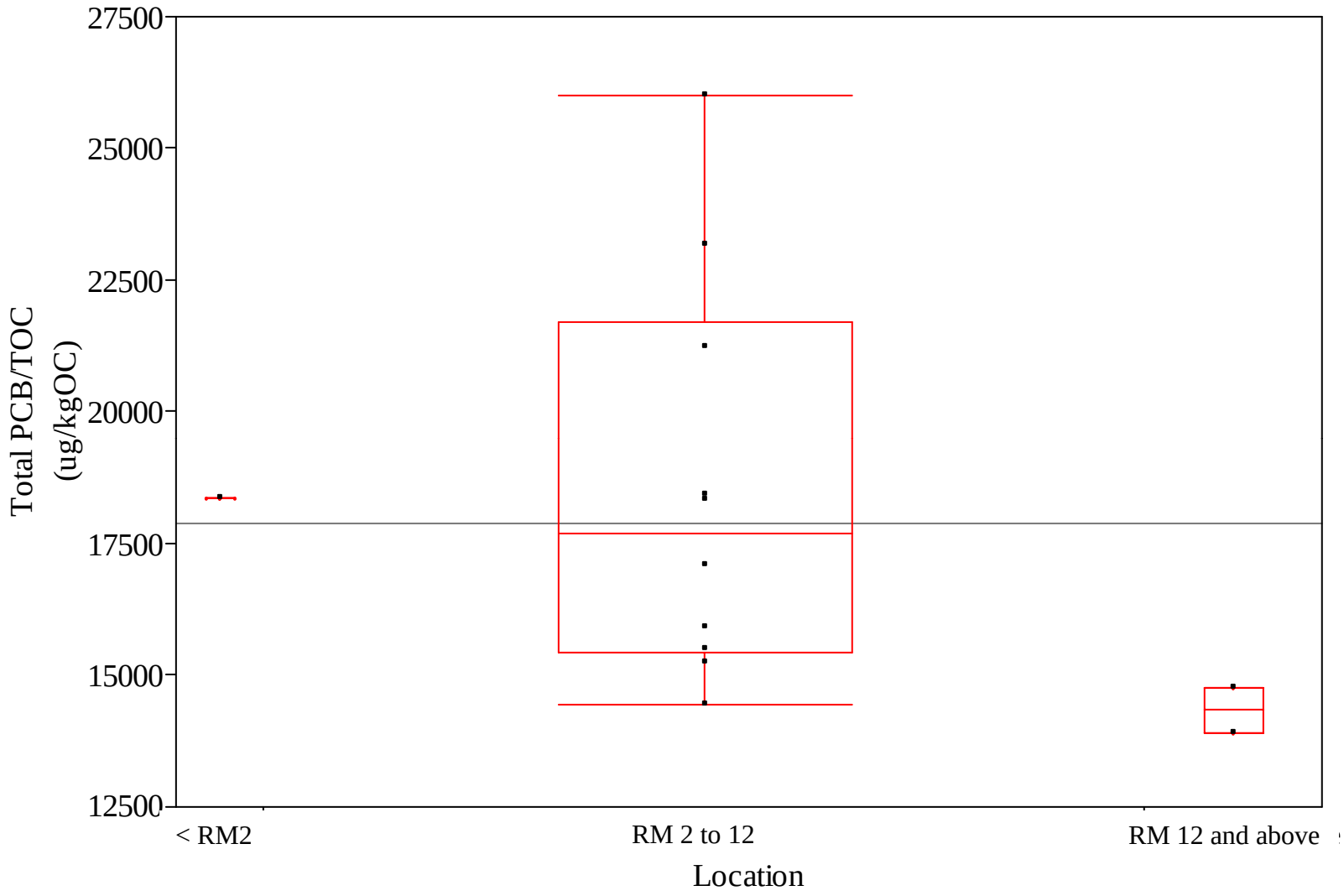


Total PCB Concentration vs River Mile
Newark Bay, Lower Passaic and Upper Passaic

Lower Passaic River Restoration Project

Figure 15-10

2009

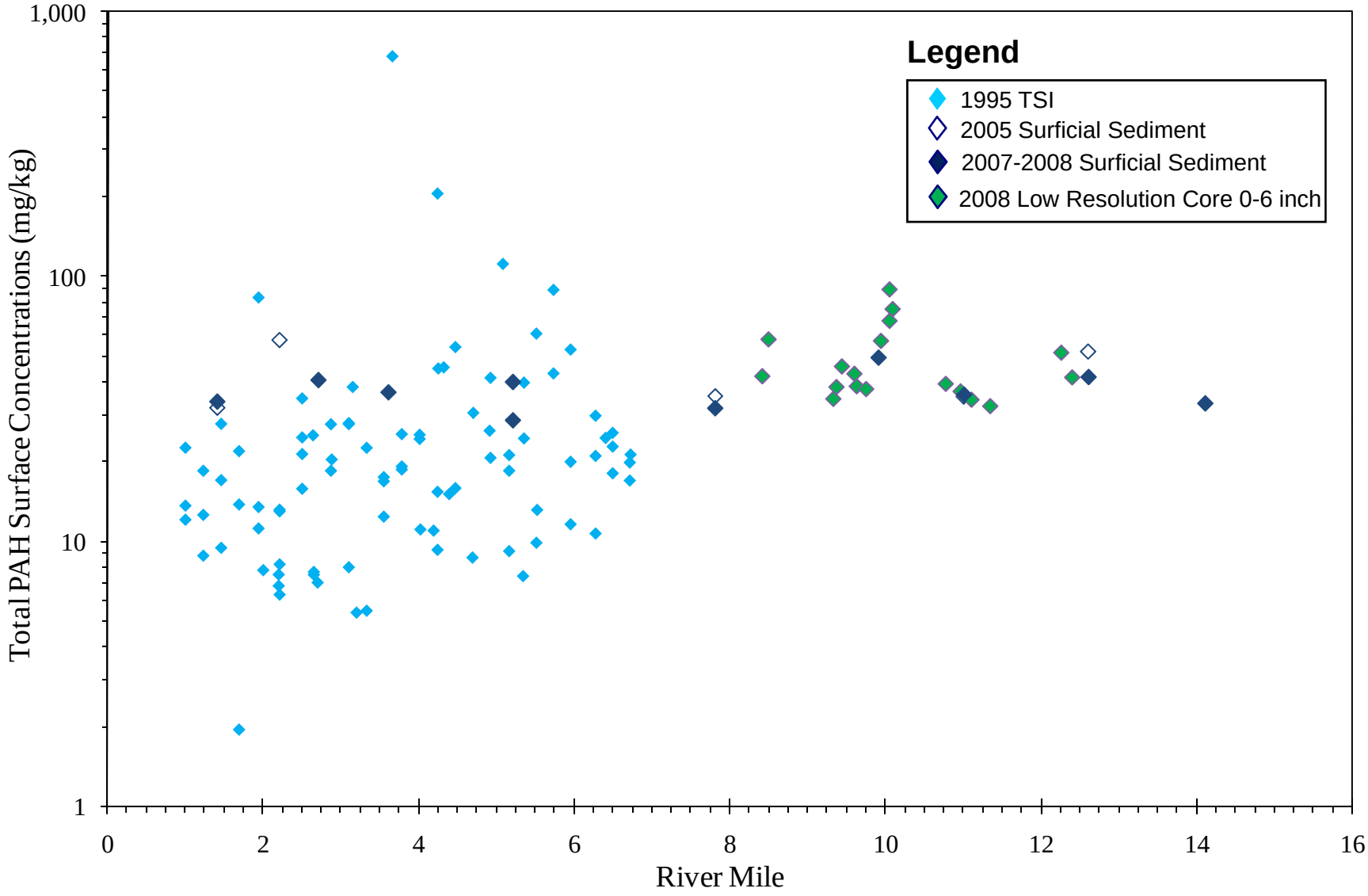


TOC Normalized Total PCB Concentration in the Lower Passaic River Surficial Sediment

Lower Passaic River Restoration Project

Figure 15-11

2009

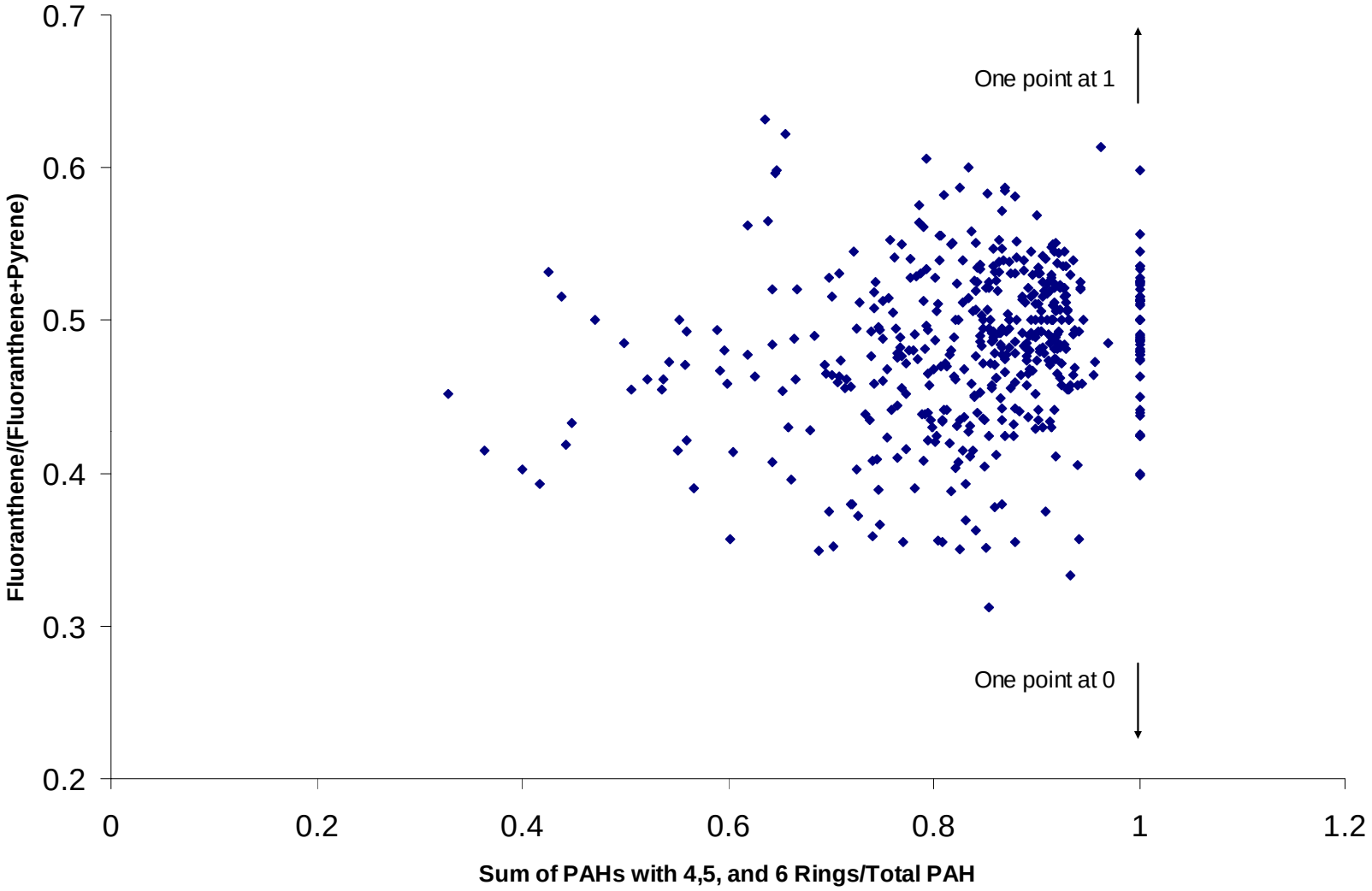


1995, 2005 and 2007-2008 Surface Sediment Total PAHs versus River Mile

Lower Passaic River Restoration Project

Figure 15-12

2009



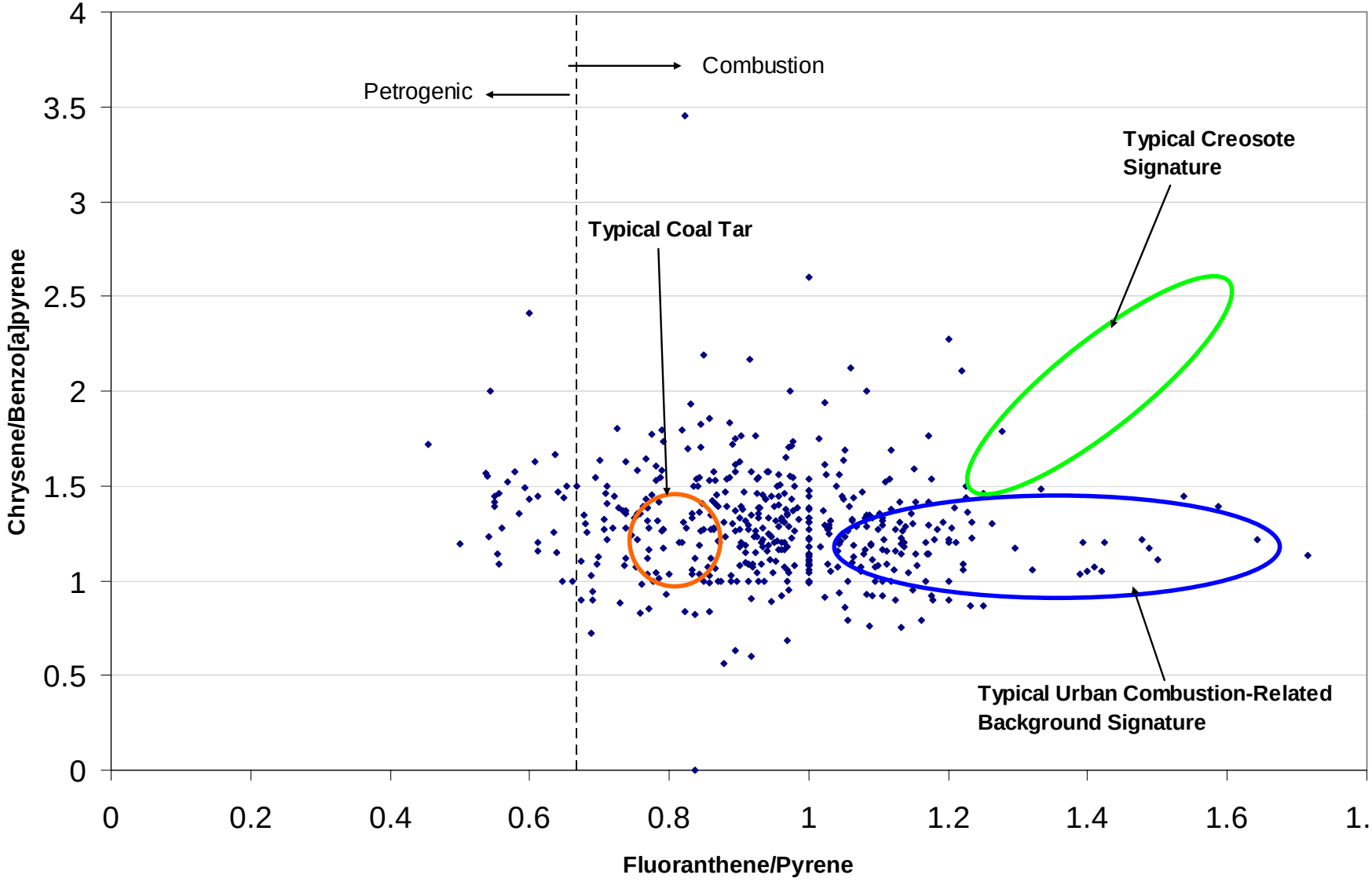
Notes
1. Data Source: Tierra Solutions, Inc., 1995 Dataset
2. Location: RM1 to 7

PAH Indicator Ratios for Passaic River Sediments

Lower Passaic River Restoration Project

Figure 15-13

2009

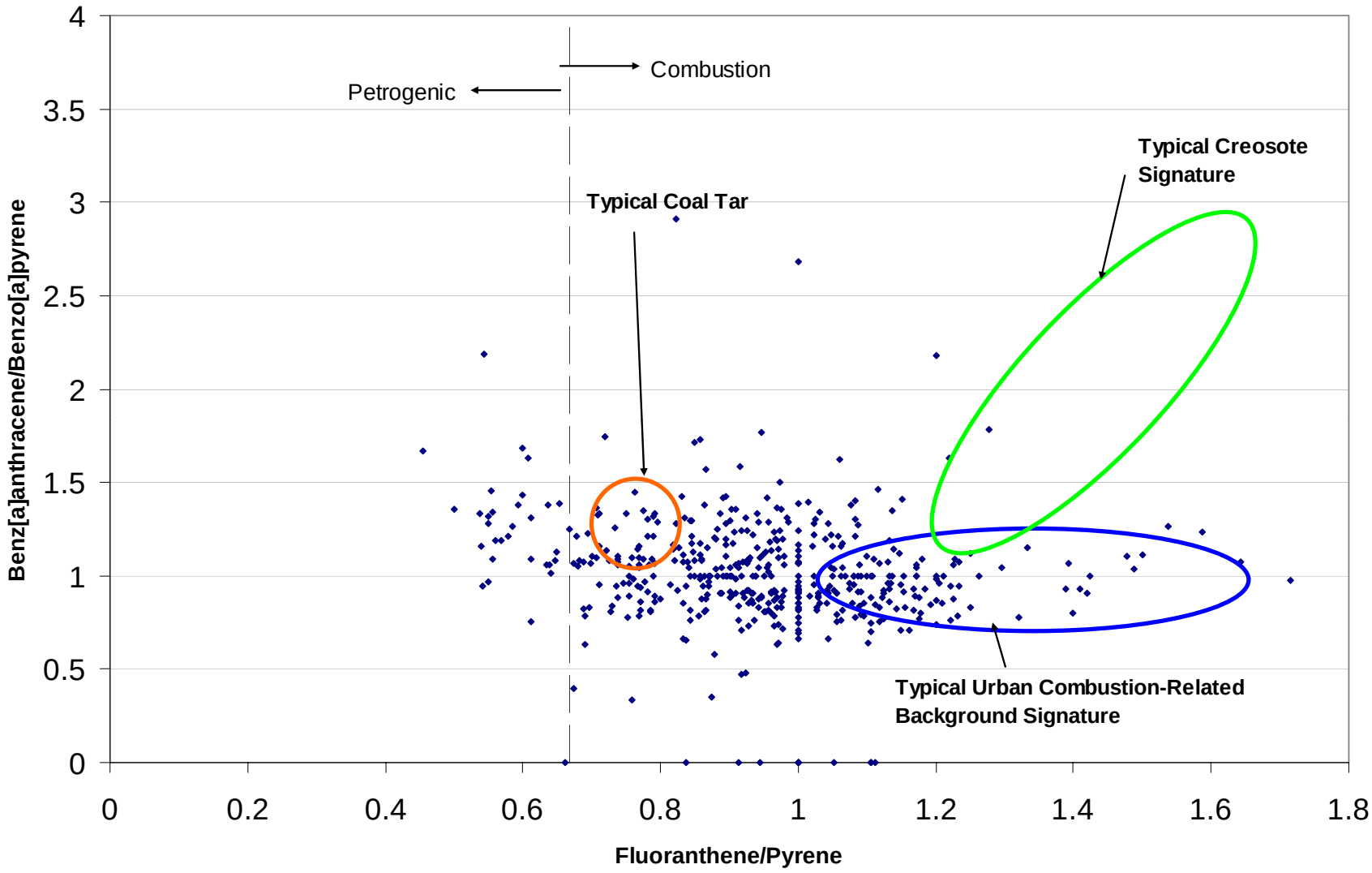


Double Ratio Analysis: Passaic River Sediment PAH Compared to Costa and Sauer (2005) Source Signatures

Lower Passaic River Restoration Project

Figure 15-14a

2009

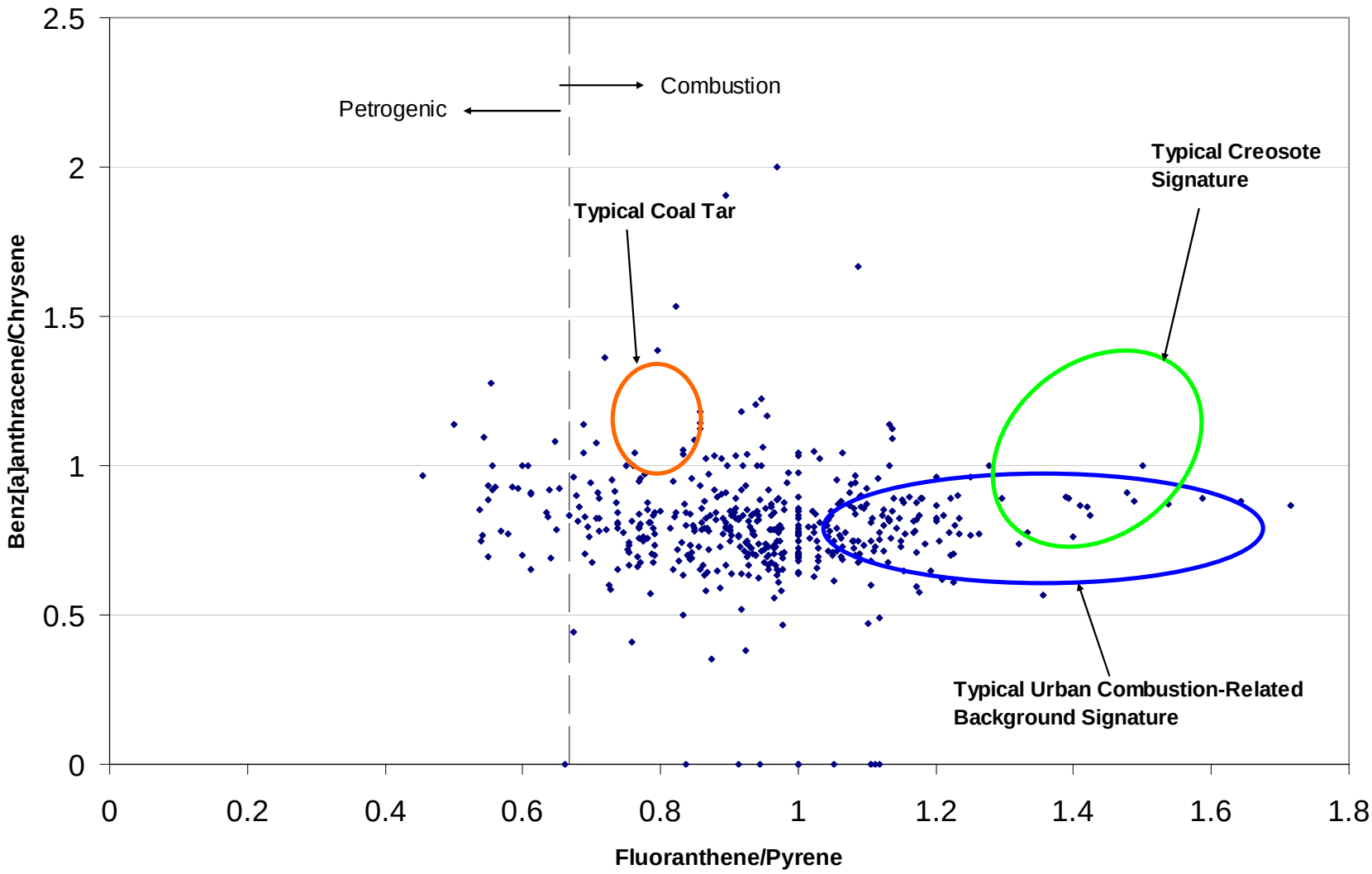


Double Ratio Analysis: Passaic River Sediment PAH Compared to Costa and Sauer (2005) Source Signatures

Lower Passaic River Restoration Project

Figure 15-14b

2009



Double Ratio Analysis: Passaic River Sediment PAH Compared to Costa and Sauer (2005) Source Signatures

Lower Passaic River Restoration Project

Figure 15-14c

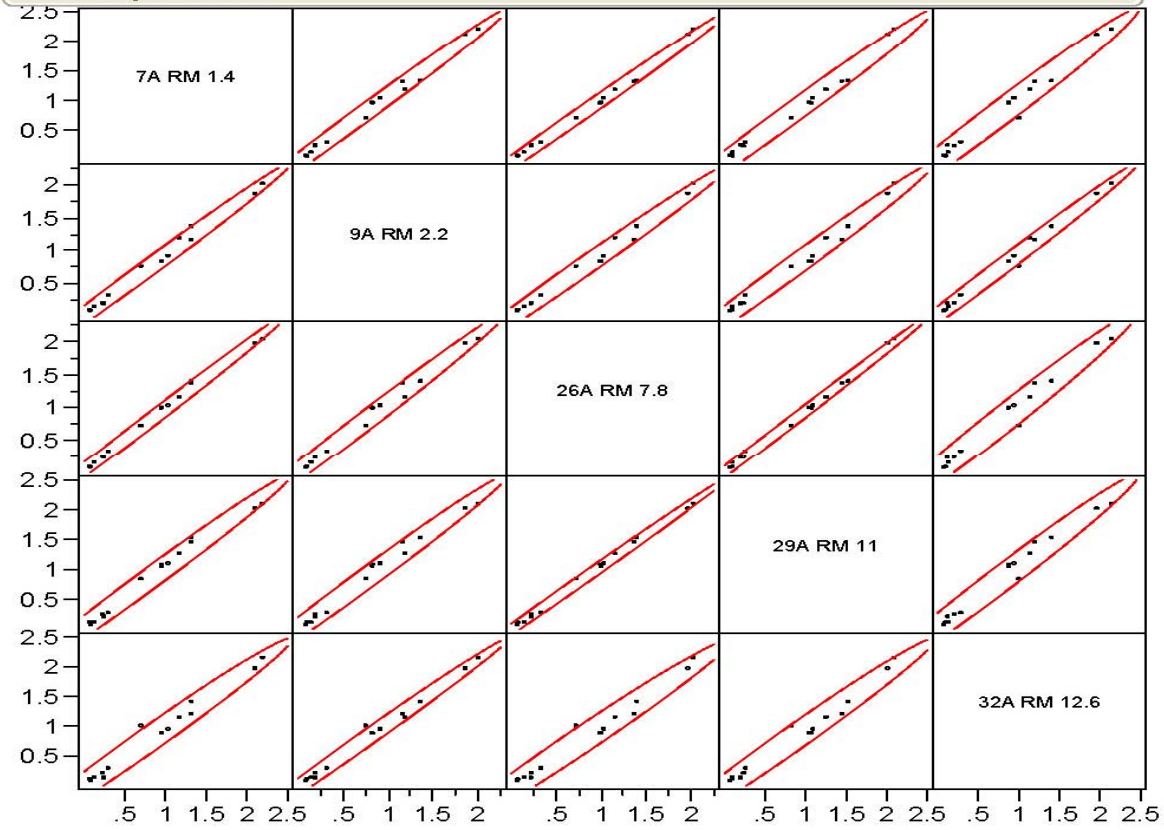
2009

Multivariate Passaic PAHs Normalized to BaA

Correlations

	7A RM 1.4	9A RM 2.2	26A RM 7.8	29A RM 11	32A RM 12.6
7A RM 1.4	1.0000	0.9945	0.9965	0.9917	0.9879
9A RM 2.2	0.9945	1.0000	0.9936	0.9920	0.9950
26A RM 7.8	0.9965	0.9936	1.0000	0.9979	0.9871
29A RM 11	0.9917	0.9920	0.9979	1.0000	0.9876
32A RM 12.6	0.9879	0.9950	0.9871	0.9876	1.0000

Scatterplot Matrix

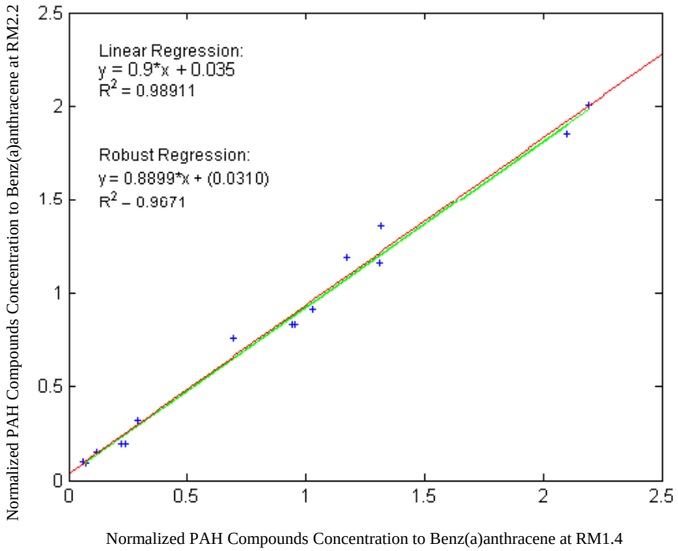


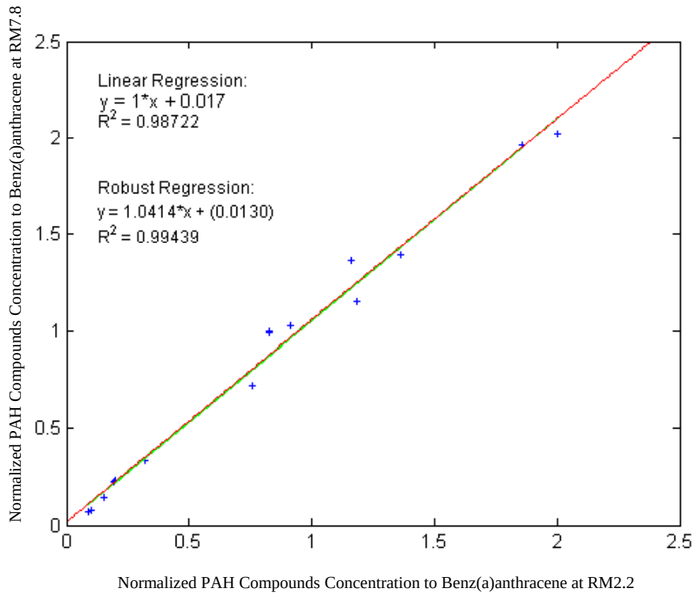
Correlation Among Sampling Locations for PAH Compounds Normalized to Benz(a)anthrazene for the Lower Passaic River High Resolution Cores Surface Sediments

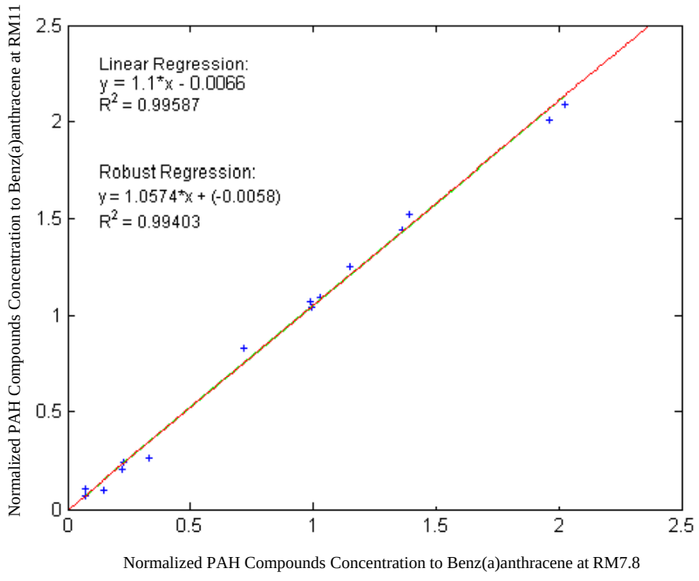
Lower Passaic River Restoration Project

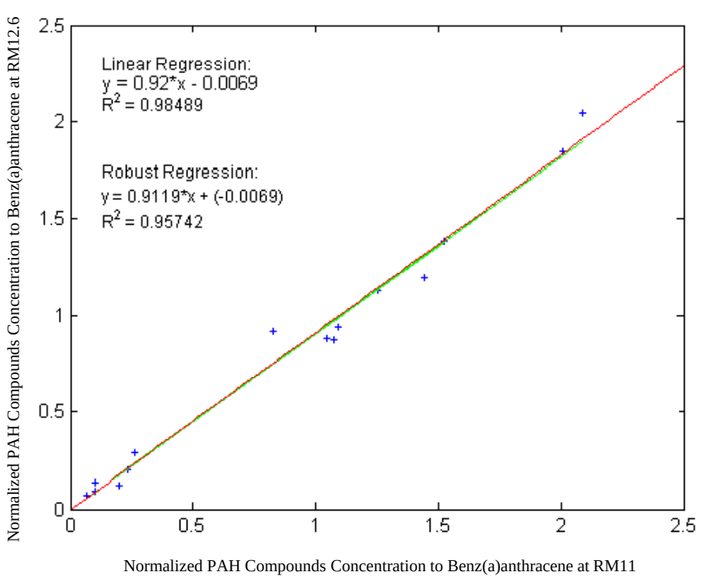
Figure 15-15

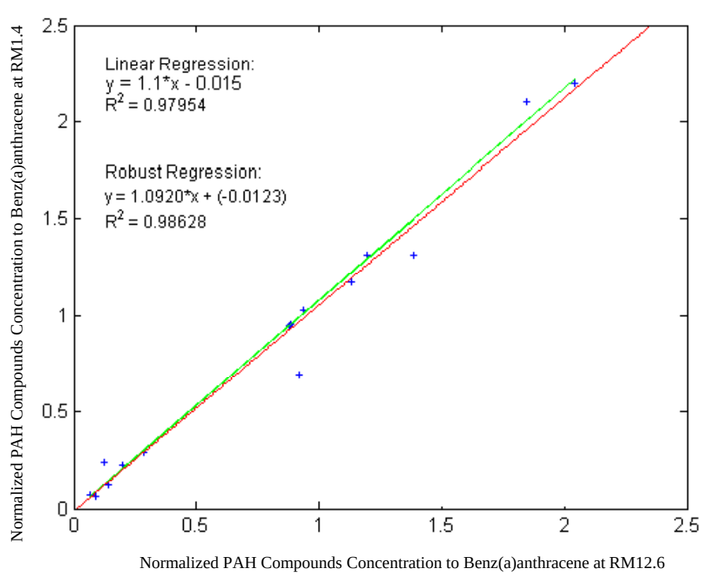
2009











Legend

PAH Compounds Concentration Normalized to Benz(a)anthracene

Linear Regression

Robust Regression

Notes

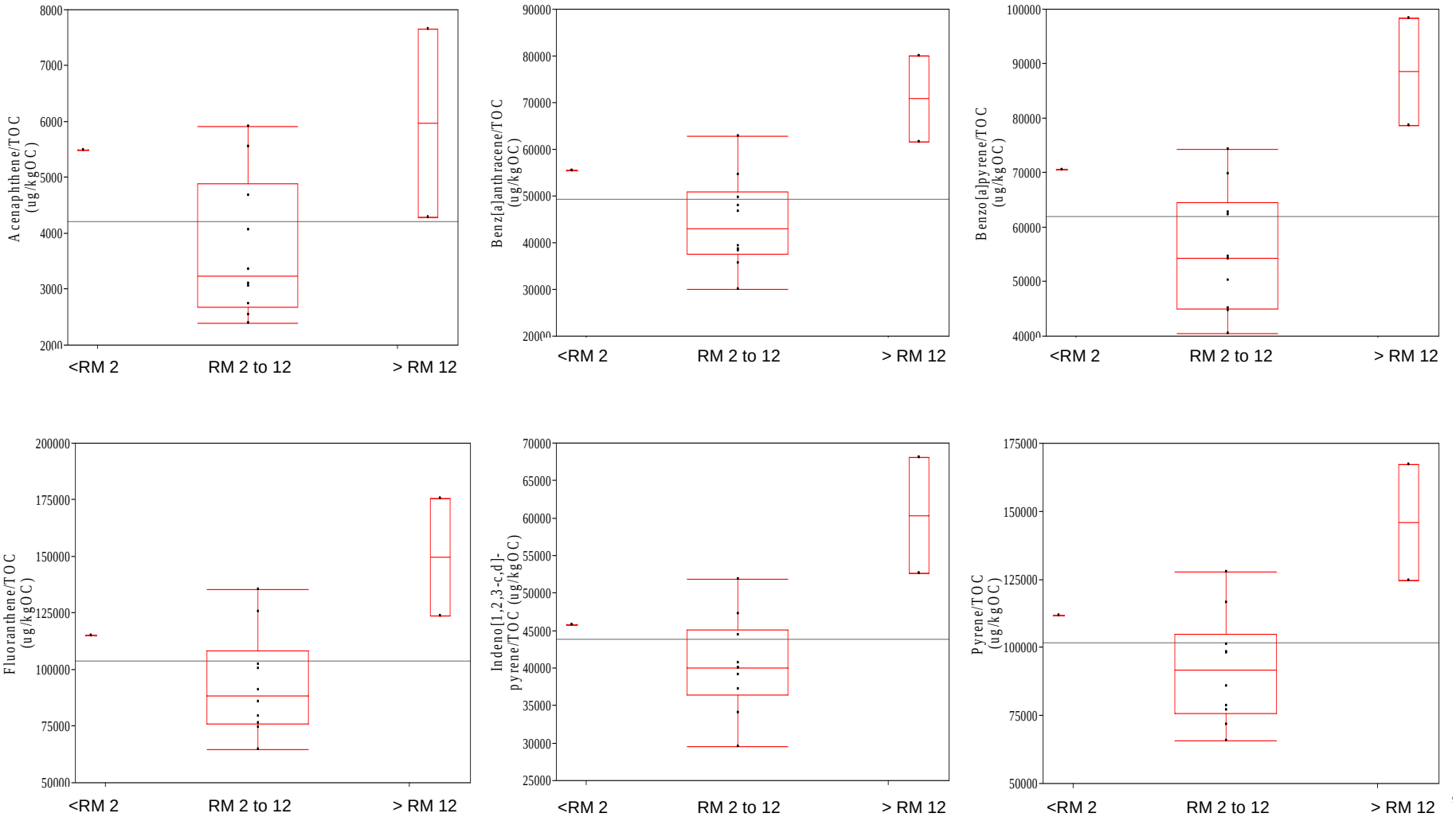
US Army Corp of Engineers

Linear and Robust Regression for PAH Compounds Concentration Normalized to Dieldrin in the Lower Passaic River High Resolution Core Surface Sediments

Lower Passaic River Restoration Project

Figure 15-16

2009

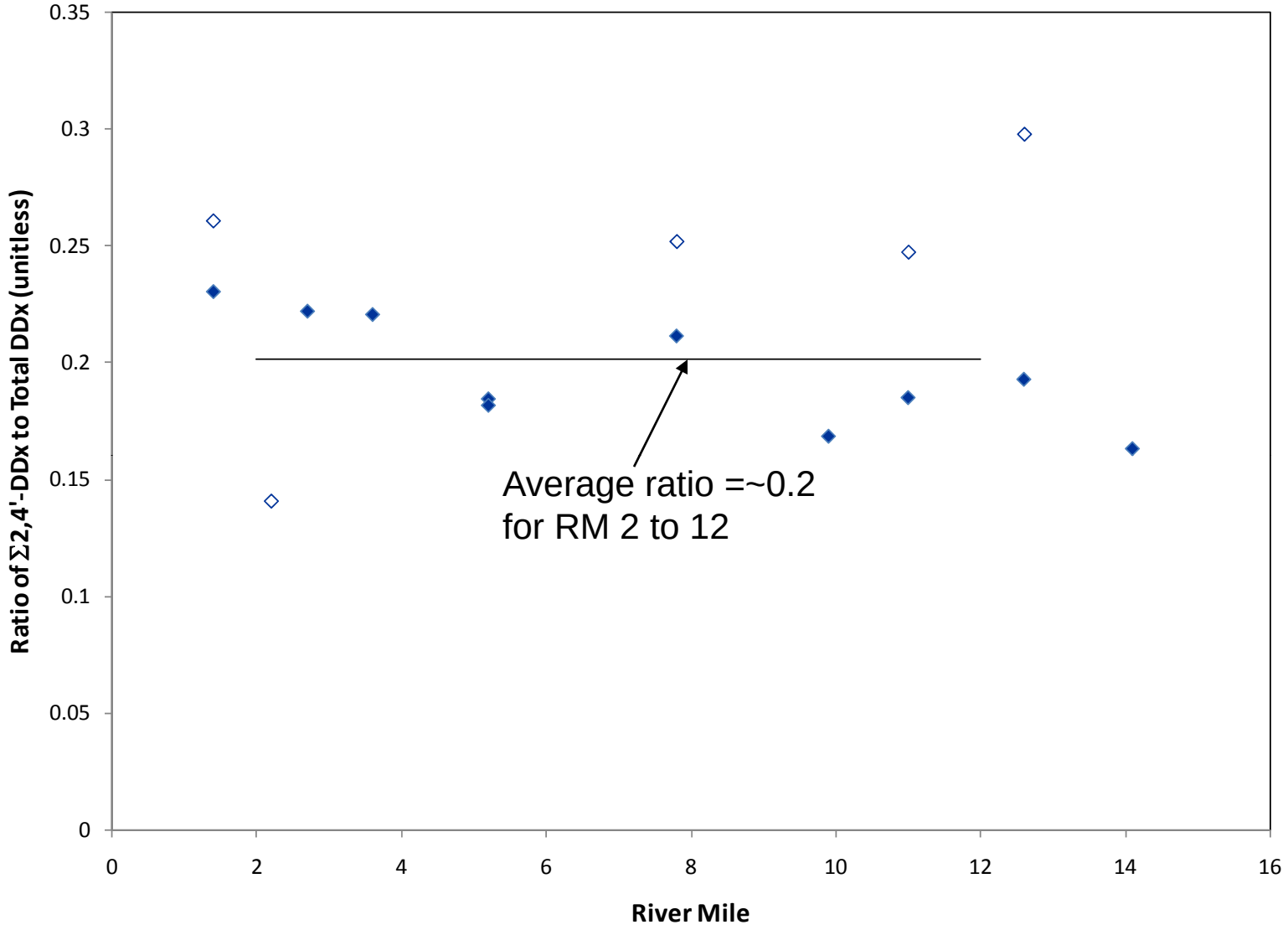


Box and Whiskers Plots of PAH Compounds for Samples Located Below RM2, RM2 to 12 and Above RM12

Lower Passaic River Restoration Project

Figure 15-17

2009

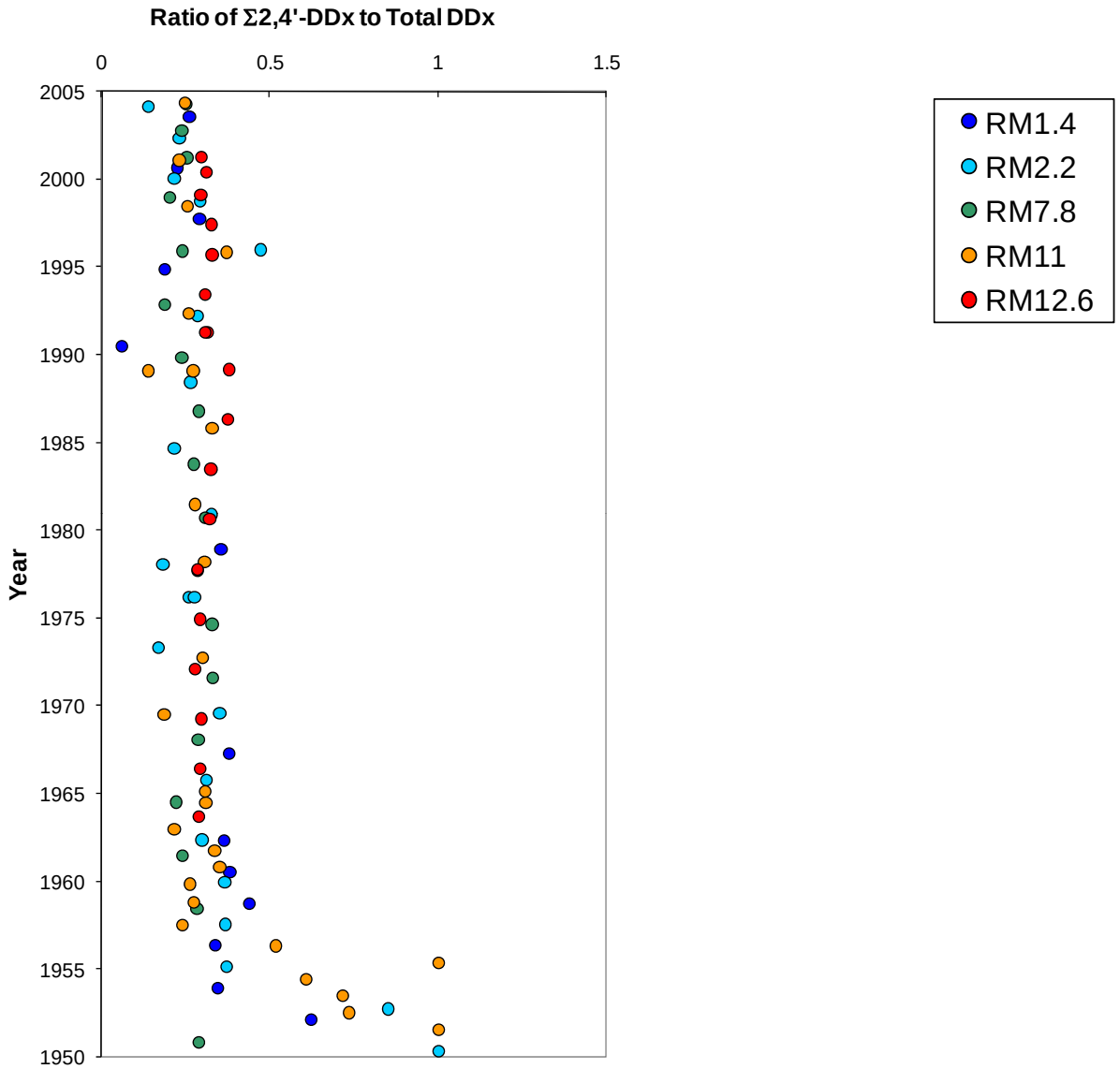


Ratio of 2,4'-DDx to Total DDx
2005 High Resolution Core Tops and 2007-2008 Surface Sediment

Lower Passaic River Restoration Project

Figure 15-18a

2009

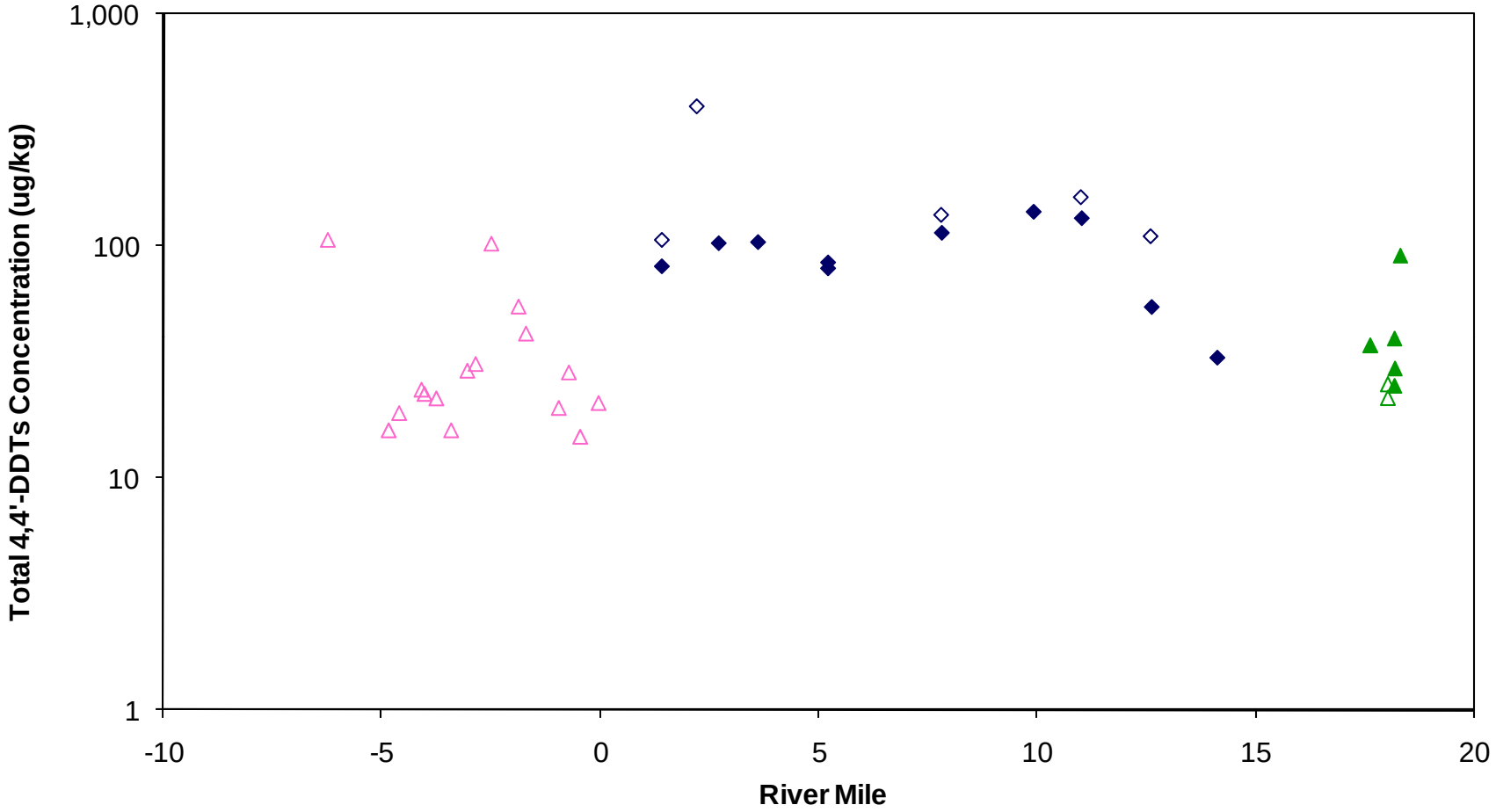


Ratio of 2,4'-DDx to Total DDx
Down Core Profile - 2005 High Resolution

Lower Passaic River Restoration Project

Figure 15-18b

2009



Sum of 4,4'-DDTs vs River Mile
Newark Bay, Lower Passaic and Upper Passaic

Lower Passaic River Restoration Project

Figure 15-19

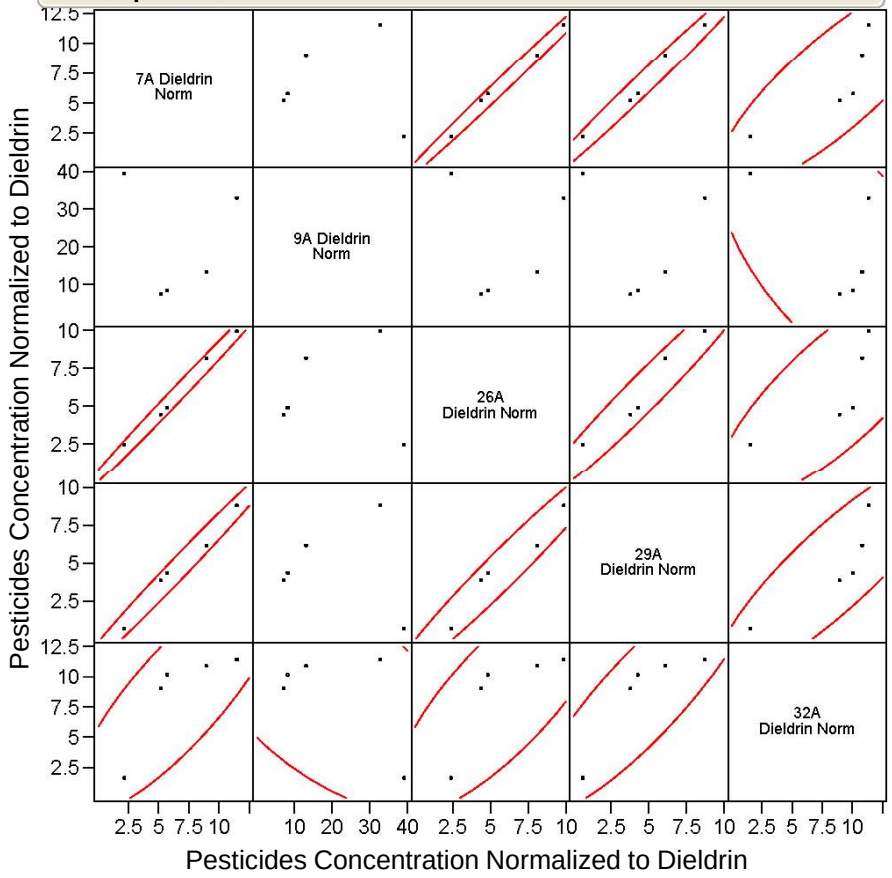
2009

Multivariate

Correlations

	7A Dieldrin Norm	9A Dieldrin Norm	26A Dieldrin Norm	29A Dieldrin Norm	32A Dieldrin Norm
7A Dieldrin Norm	1.0000	-0.0474	0.9959	0.9915	0.8338
9A Dieldrin Norm	-0.0474	1.0000	0.0013	-0.1104	-0.5734
26A Dieldrin Norm	0.9959	0.0013	1.0000	0.9757	0.7952
29A Dieldrin Norm	0.9915	-0.1104	0.9757	1.0000	0.8745
32A Dieldrin Norm	0.8338	-0.5734	0.7952	0.8745	1.0000

Scatterplot Matrix

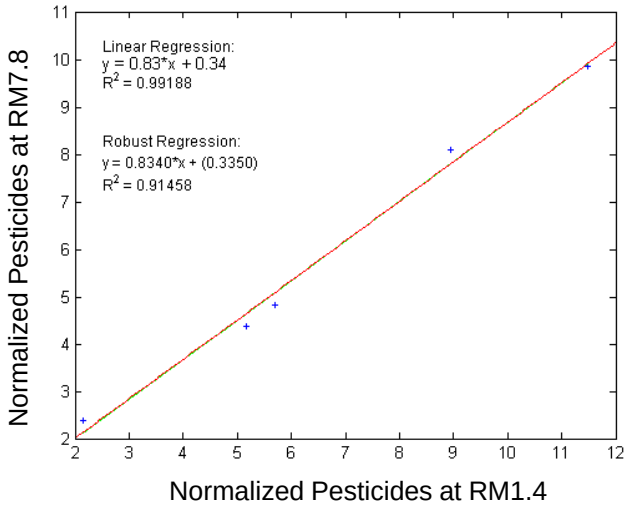


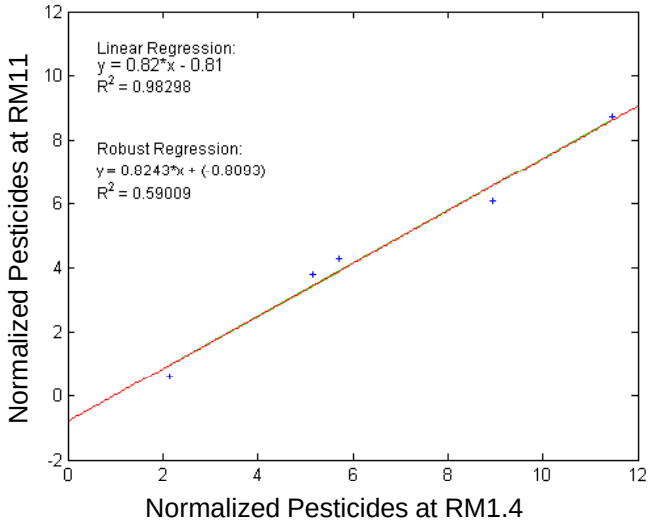
Correlation Among Sampling Locations for Pesticides Compounds Normalized to Dieldrin for the Lower Passaic River High Resolution Cores Surface Sediments

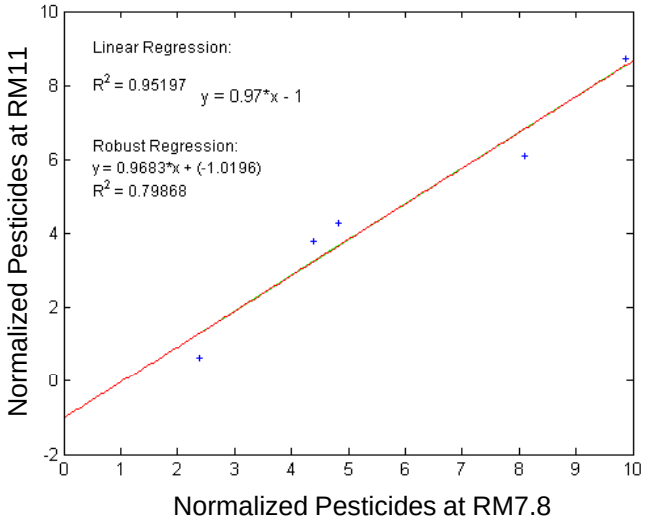
Lower Passaic River Restoration Project

Figure 15-20

2009





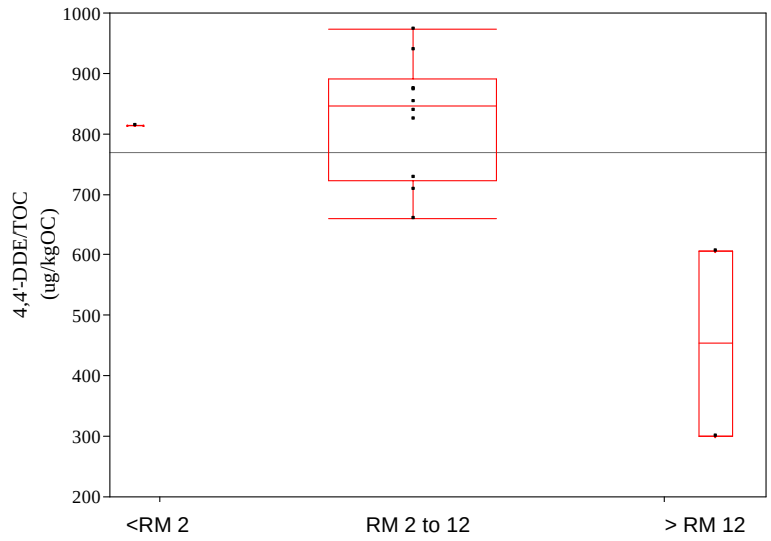


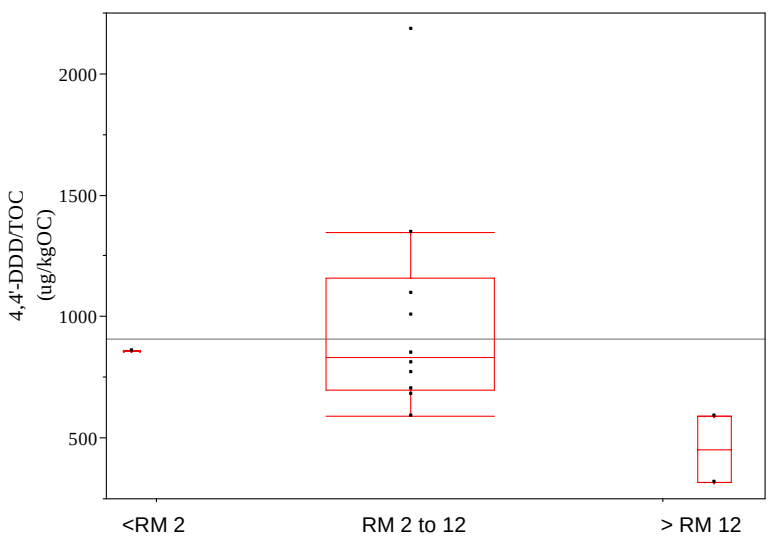
Linear and Robust Regression for Pesticides in the Lower Passaic River Surface Sediments

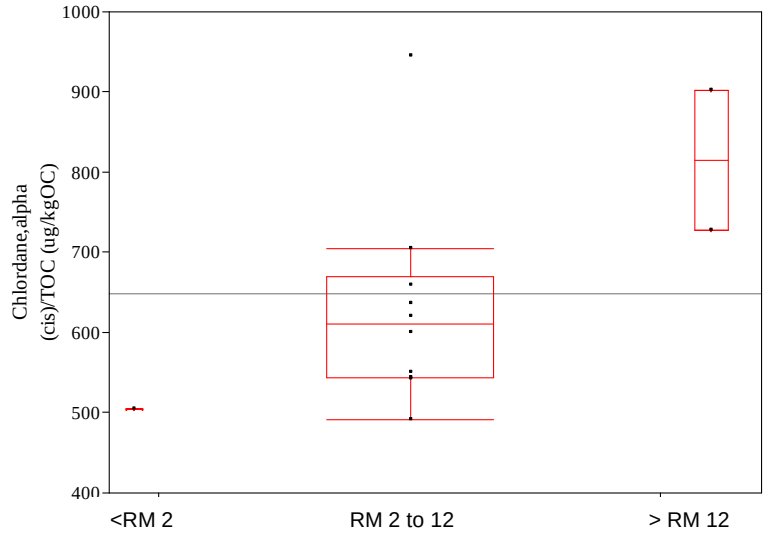
Lower Passaic River Restoration Project

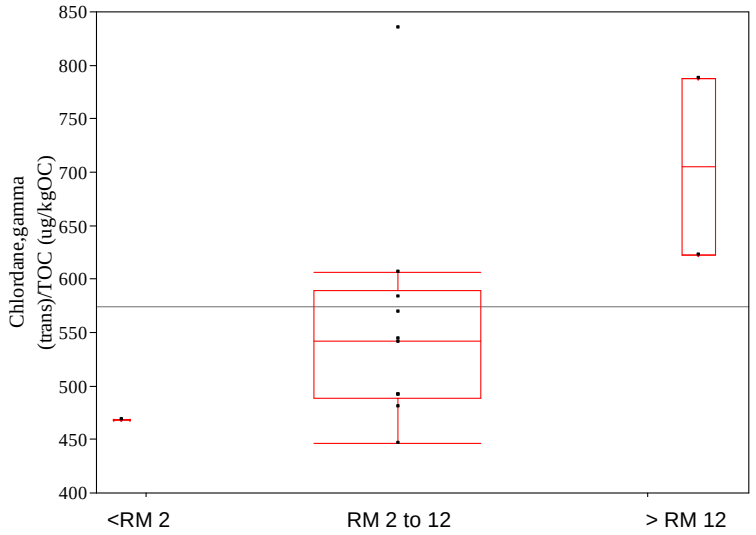
Figure 15-21

2009







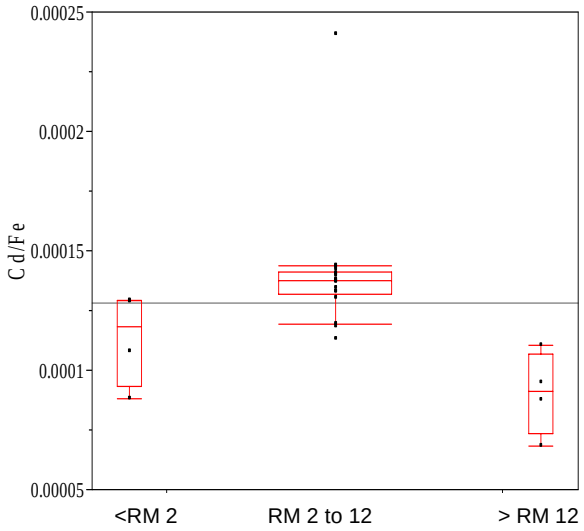


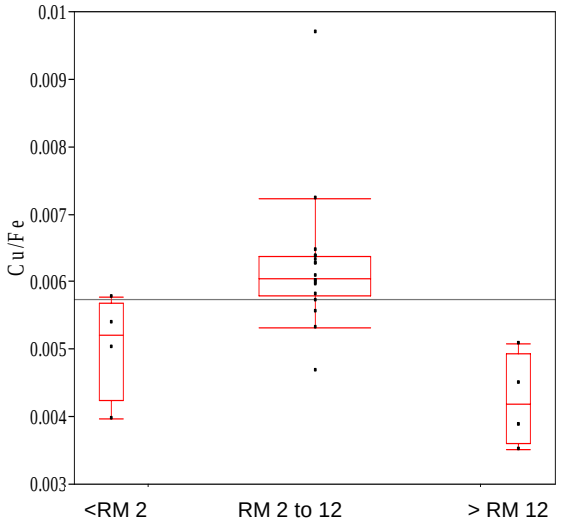
Box and Whiskers Plots of Pesticide Compounds for Samples Located Below RM2, RM2 to 12 and Above RM12

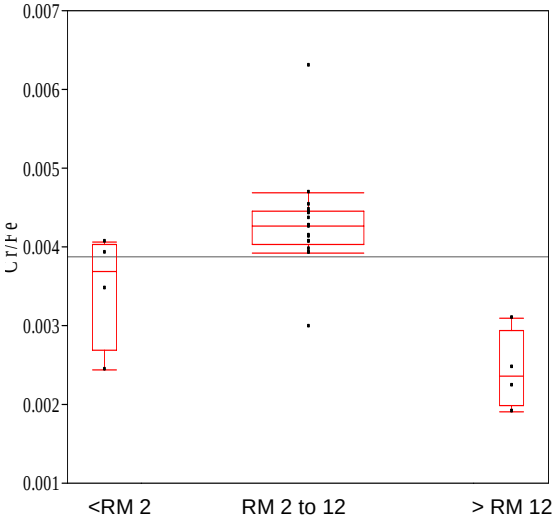
Lower Passaic River Restoration Project

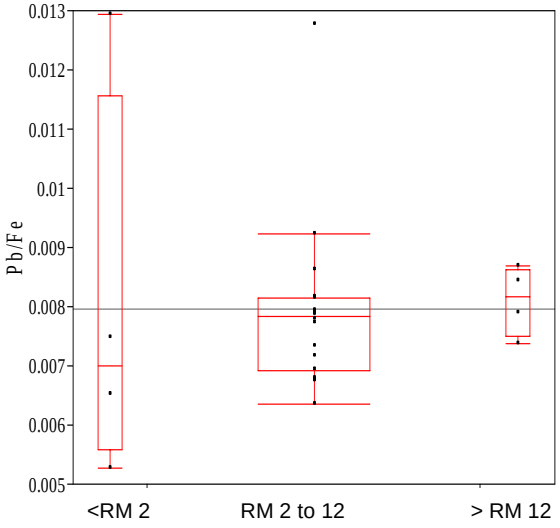
Figure 15-22

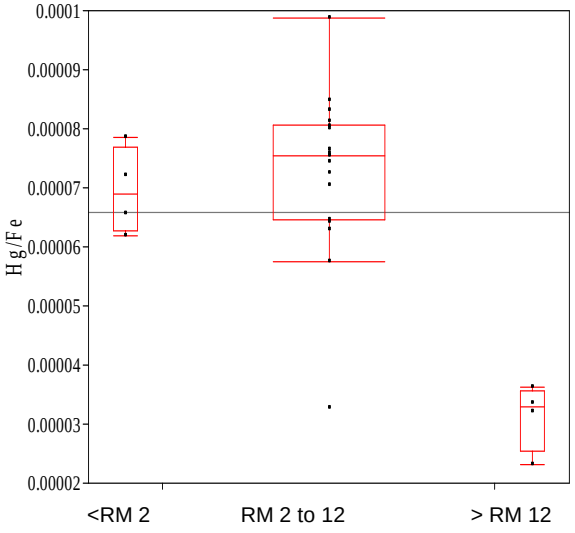
2009









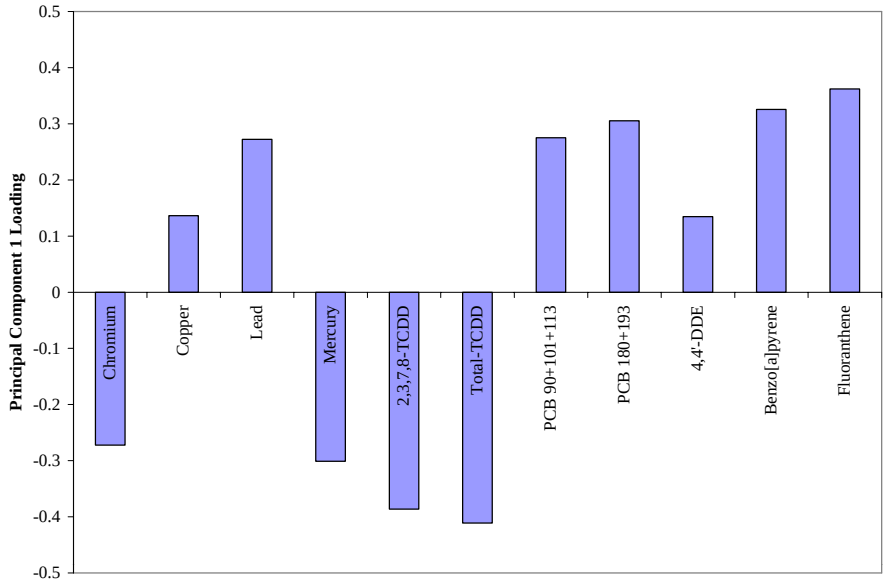


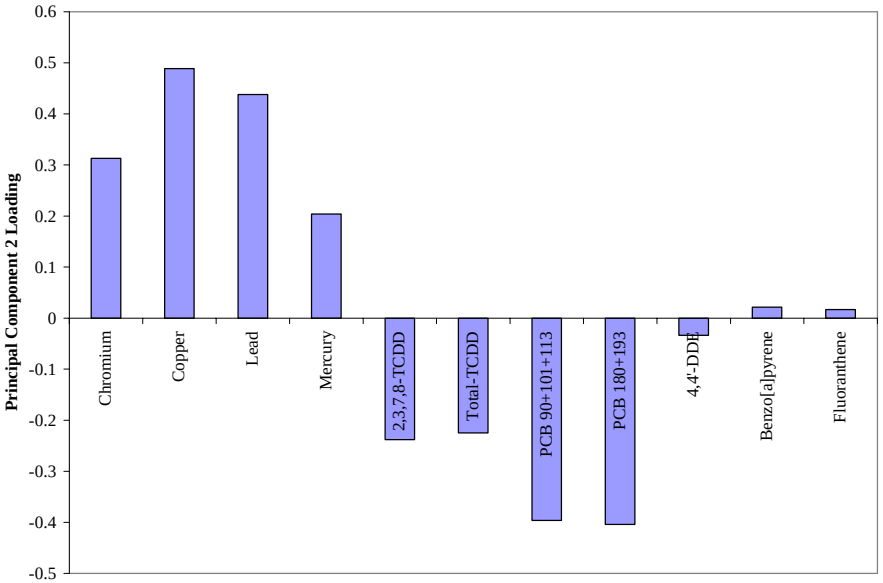
Box and Whiskers Plots of Metals for Samples Located Below RM2, RM2 to 12 and Above RM12

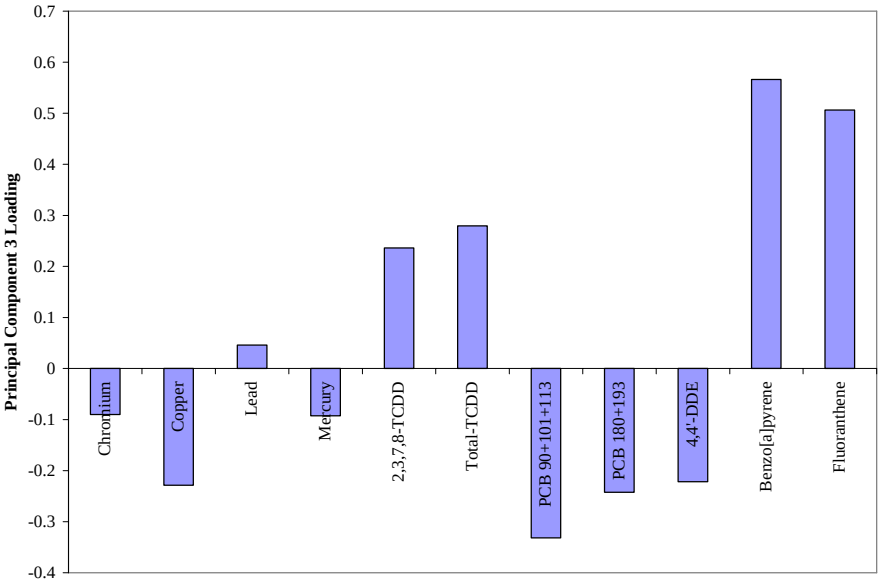
Lower Passaic River Restoration Project

Figure 15-23

2009





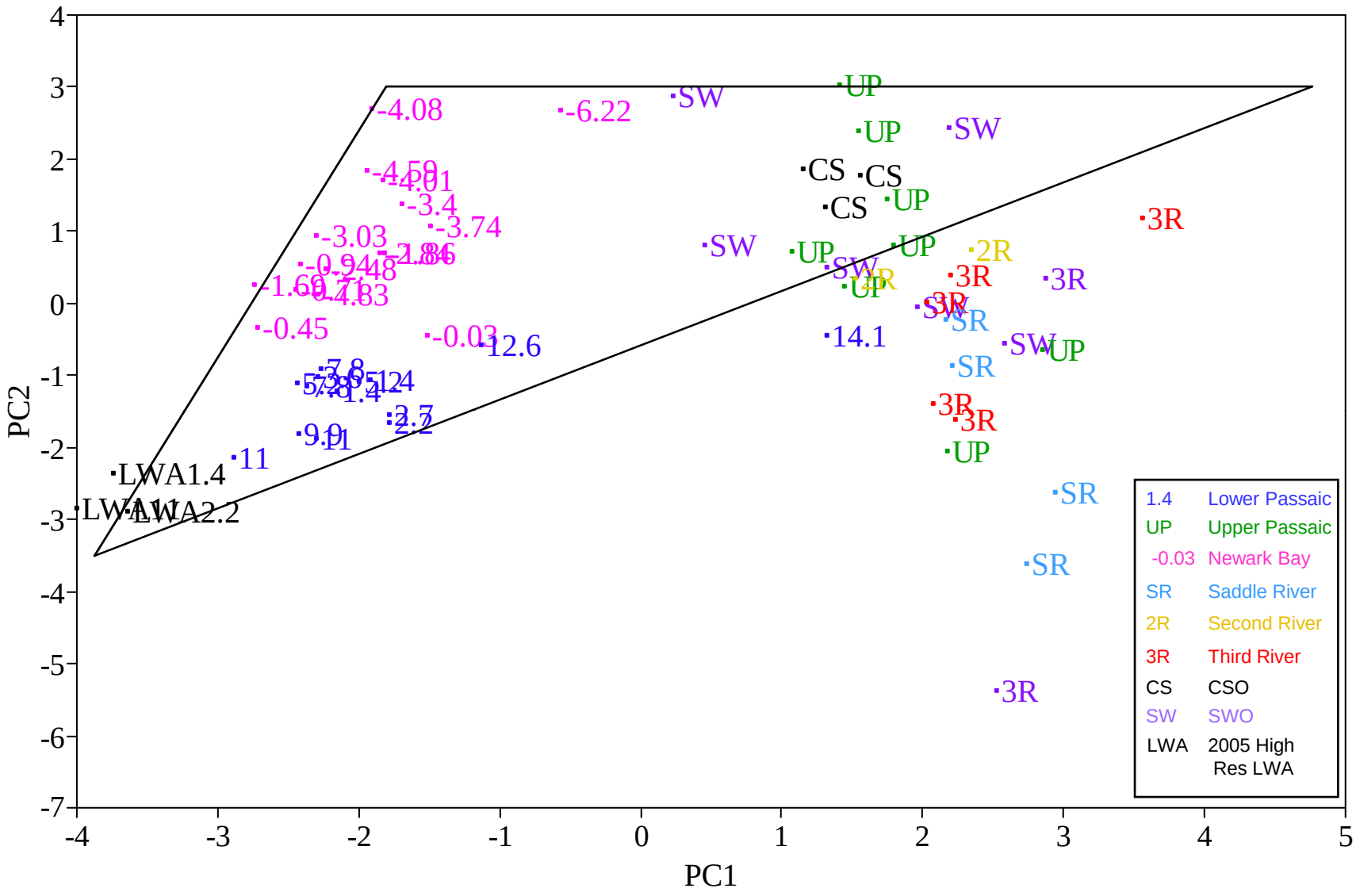


Combined Analytes Principal Components Loading

Figure 15-24a

2009

Lower Passaic River Restoration Project

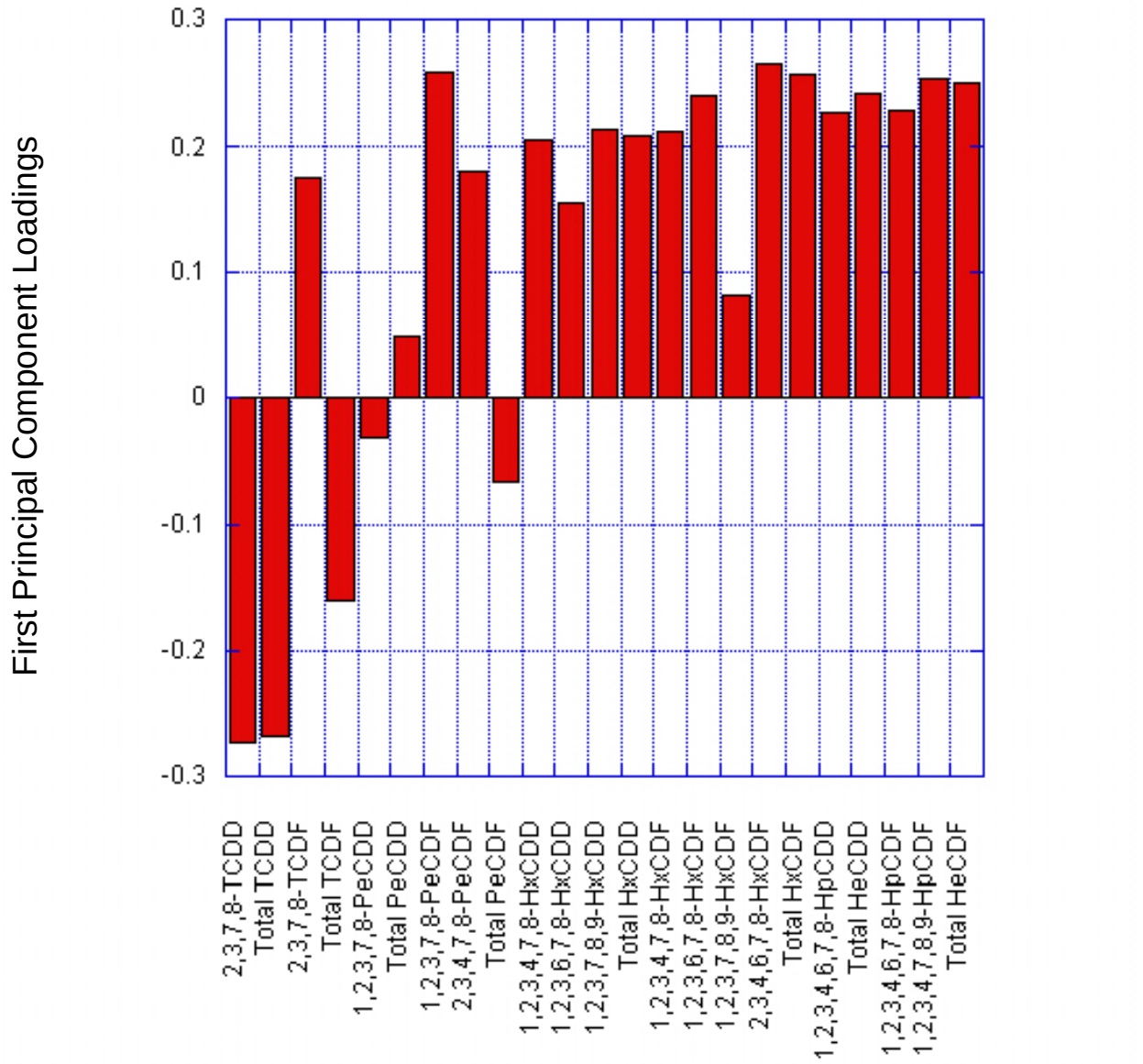


Combined Analytes Principal Component 1 vs. Principal Component 2

Figure 15-24b

2009

Lower Passaic River Restoration Project



Notes

The principal component analysis was run on all of the available tetra-, penta-, hexa- and hepta-dioxin and furan congeners and the homologue totals. Mass fractions were calculated by dividing each concentration value by the sum of all concentrations for each slice.

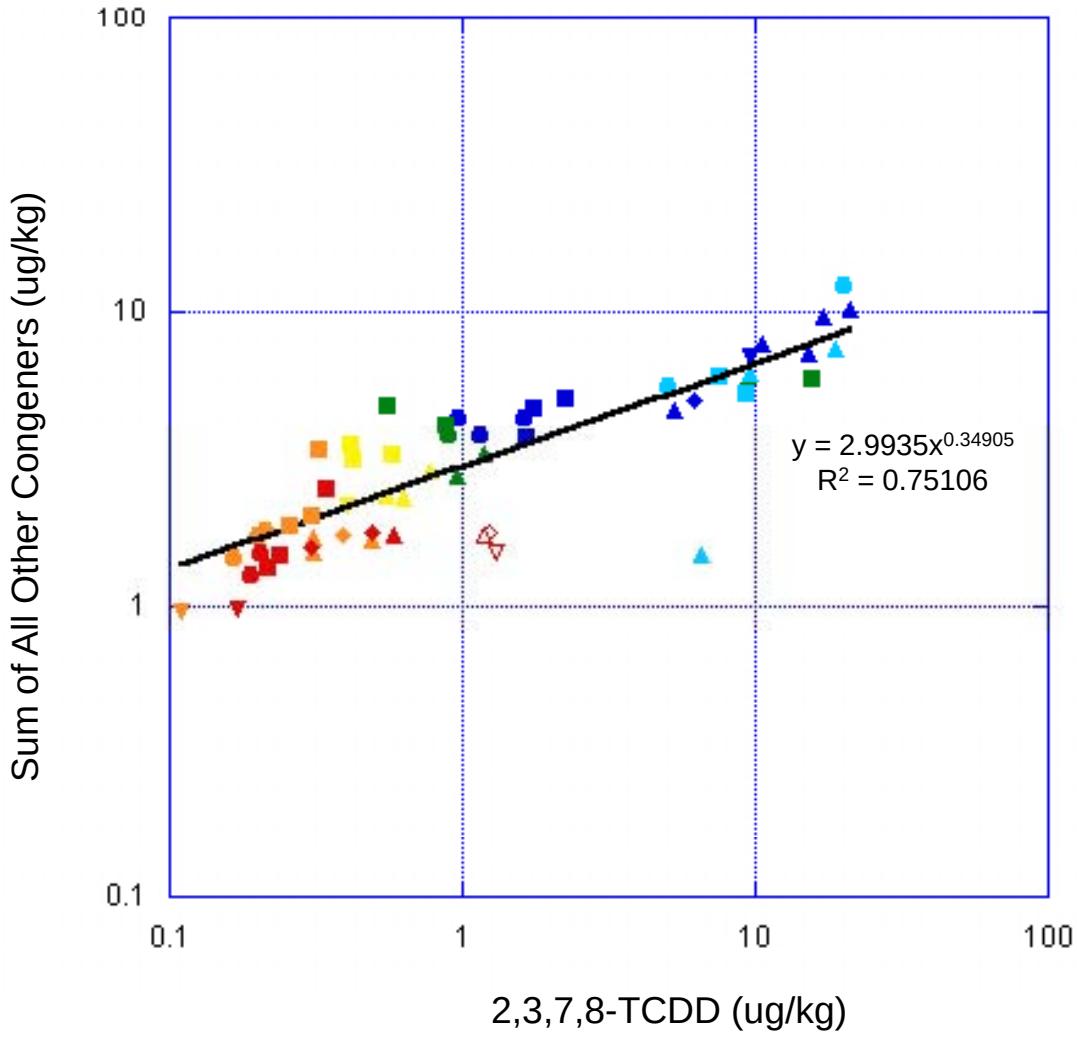
The first principal component accounts for 54% of the variance; the second principal component accounts for 16% of the variance.

First Principal Component Loadings for Dioxins and Furans in High Resolution Core Samples

Lower Passaic River Restoration Project

Figure 15-25

2009



Legend

High Resolution Core Slices

- River Mile 1.4
- River Mile 2.2
- River Mile 7.8
- River Mile 11
- River Mile 12.6
- 1950s
- 1960s
- 1970s
- 1980s
- 1990s
- 2000s

Slices with High Dioxin Concentration

- RM 7.8, 2001 slice
- RM 11, 2001 slice
- RM 12.6, 2001 slice
- Regression Line

Notes

Dioxin congeners include:

1,2,3,4,6,7,8-HpCDD
1,2,3,4,7,8-HxCDD
1,2,3,6,7,8-HxCDD
1,2,3,7,8,9-HxCDD
1,2,3,7,8-PeCDD
2,3,7,8-TCDD

Furan congeners include:

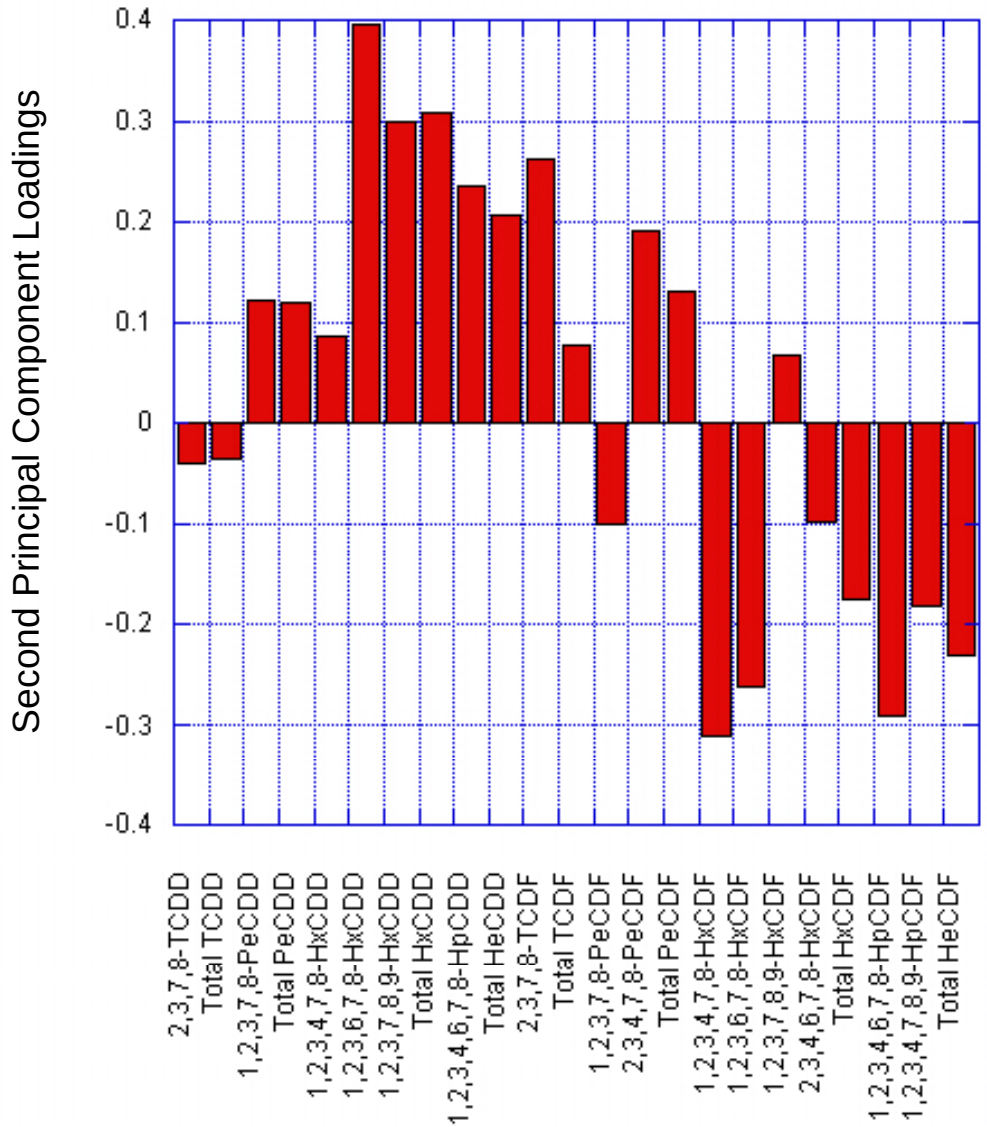
1,2,3,4,6,7,8-HpCDF
1,2,3,4,7,8,9-HpCDF
1,2,3,4,7,8-HxCDF
1,2,3,6,7,8-HxCDF
1,2,3,7,8,9-HxCDF
2,3,4,6,7,8-HxCDF
1,2,3,7,8-PeCDF
12,3,4,7,8-PeCDF
2,3,7,8-TCDF

2,3,7,8-TCDD Concentration vs. the Sum of All Other Dioxin and Furan Congeners

Lower Passaic River Restoration Project

Figure 15-26

2009



Notes

The principal component analysis was run on all of the available tetra-, penta-, hexa- and hepta- dioxin and furan congeners and the homologue totals. Mass fractions were calculated by dividing each concentration value by the sum of all concentrations for each slice.

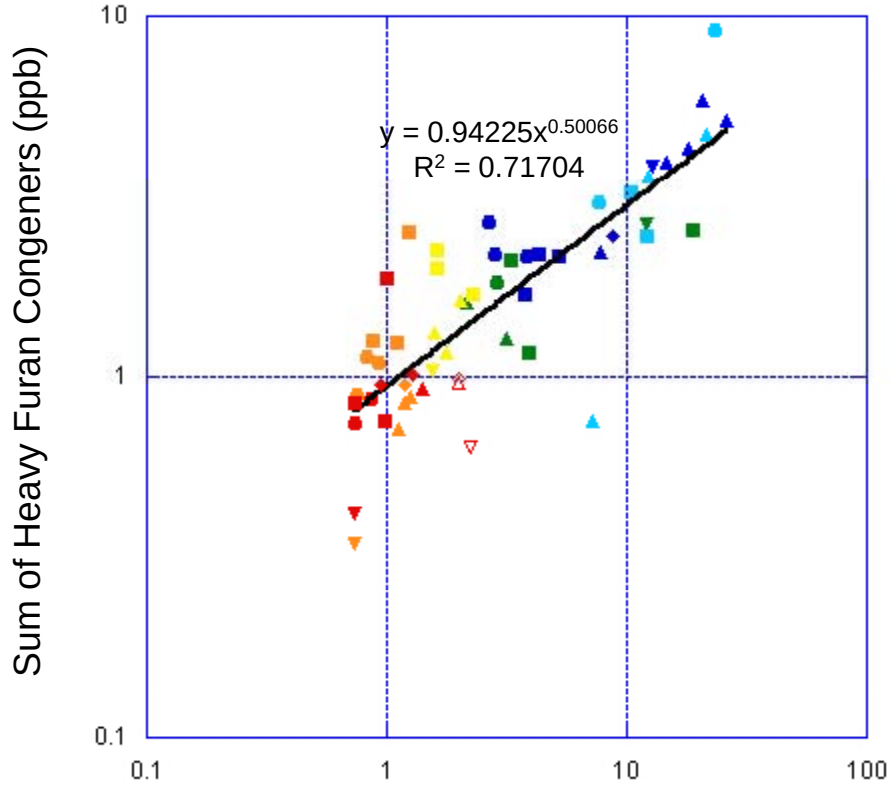
The first principal component accounts for 54% of the variance; the second principal component accounts for 16% of the variance.

Second Principal Component Loadings for Dioxins and Furans in High Resolution Core Samples

Lower Passaic River Restoration Project

Figure 15-27

2009



Legend

High Resolution Core Slices

- River Mile 1.4
- River Mile 2.2
- River Mile 7.8
- River Mile 11
- River Mile 12.6
- 1950s
- 1960s
- 1970s
- 1980s
- 1990s
- 2000s

Slices with High Dioxin Concentration

- RM 7.8, 2001 slice
- RM 11, 2001 slice
- RM 12.6, 2001 slice

Regression Line

Notes

Dioxin congeners and light furan congeners include:

1,2,3,4,6,7,8-HpCDD
1,2,3,4,7,8-HxCDD
1,2,3,6,7,8-HxCDD
1,2,3,7,8,9-HxCDD
1,2,3,7,8-PeCDD
2,3,7,8-TCDD
1,2,3,7,8-PeCDF
12,3,4,7,8-PeCDF
2,3,7,8-TCDF

Heavy furan congeners include:

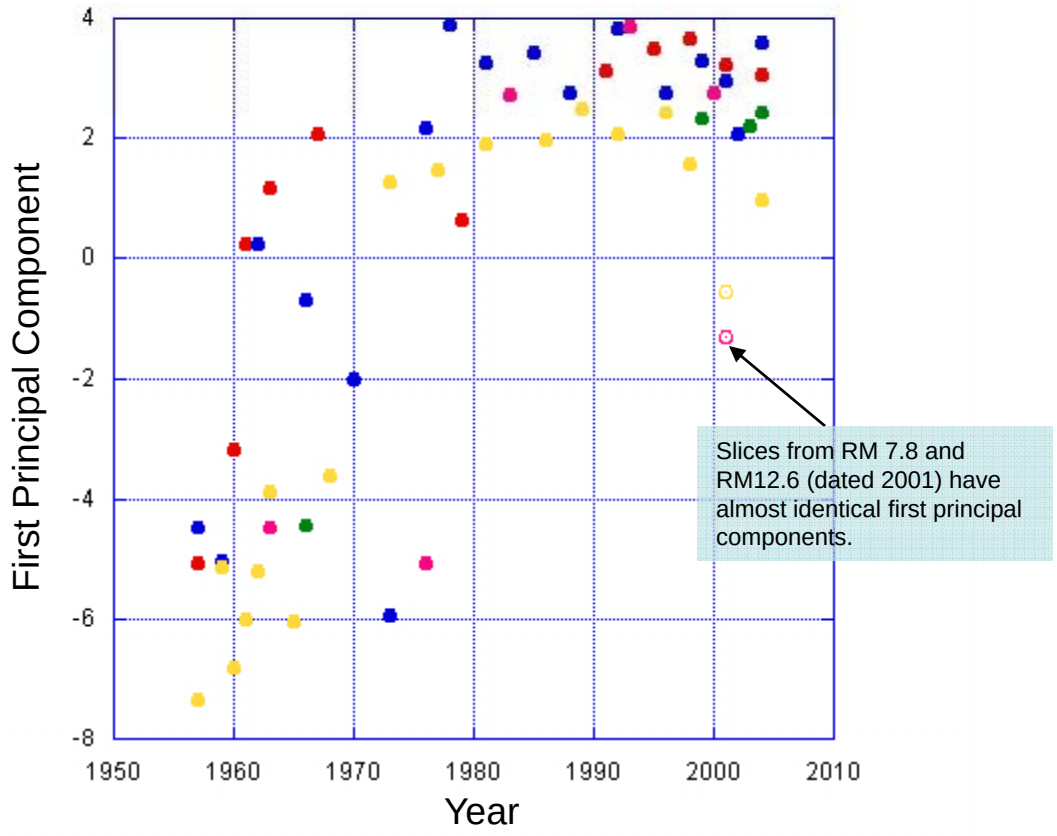
1,2,3,4,6,7,8-HpCDF
1,2,3,4,7,8,9-HpCDF
1,2,3,4,7,8-HxCDF
1,2,3,6,7,8-HxCDF
1,2,3,7,8,9-HxCDF
2,3,4,6,7,8-HxCDF

Comparison of Dioxin and Furan Congener Concentrations in High Resolution Core Samples

Lower Passaic River Restoration Project

Figure 15-28

2009



Legend

High Resolution Core Slices

- River Mile 1.4
- River Mile 2.2
- River Mile 7.8
- River Mile 11
- River Mile 12.6

Slices with High Dioxin Concentration

- RM 7.8, 2001 slice
- RM 11, 2001 slice
- RM 12.6, 2001 slice

Notes

The principal component analysis was run on all of the available tetra-, penta-, hexa- and hepta- dioxin and furan congeners and the homologue totals. Mass fractions were calculated by dividing each concentration value by the sum of all concentrations for each slice.

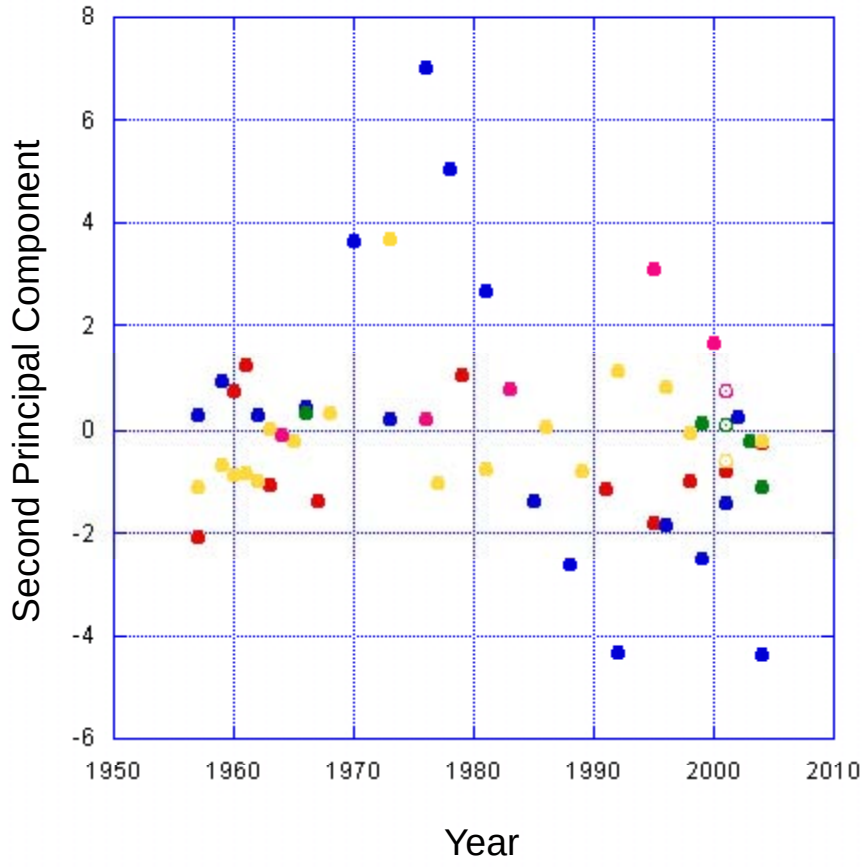
The first principal component accounts for 54% of the variance; the second principal component accounts for 16% of the variance.

First Principal Component *vs.* Approximate Year of Deposition for High Resolution Core Samples

Lower Passaic River Restoration Project

Figure 15-29

2009



Legend

High Resolution Core Slices

- River Mile 1.4
- River Mile 2.2
- River Mile 7.8
- River Mile 11
- River Mile 12.6

Slices with High Dioxin Concentration

- RM 7.8, 2001 slice
- RM 11, 2001 slice
- RM 12.6, 2001 slice

Notes

The principal component analysis was run on all of the available tetra-, penta-, hexa- and hepta- dioxin and furan congeners and the homologue totals. Mass fractions were calculated by dividing each concentration value by the sum of all concentrations for each slice.

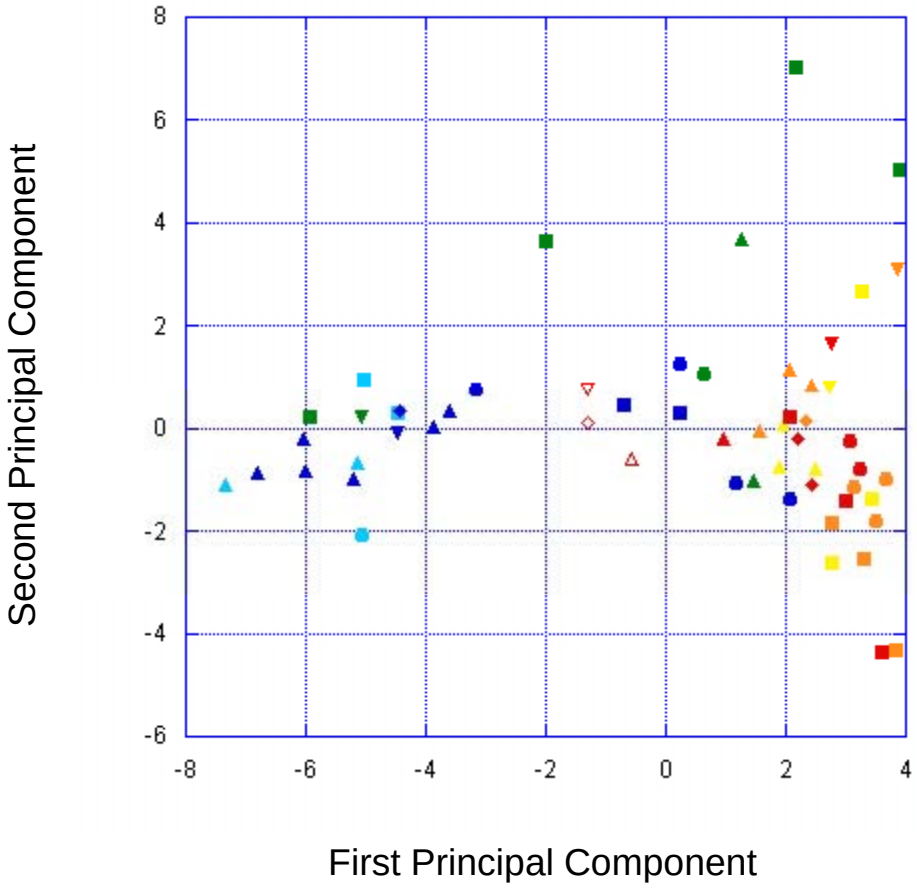
The first principal component accounts for 54% of the variance; the second principal component accounts for 16% of the variance.

Second Principal Component *vs.* Approximate Year of Deposition for High Resolution Core Samples

Lower Passaic River Restoration Project

Figure 15-30

2009



Legend

High Resolution Core Slices

- River Mile 1.4
- River Mile 2.2
- River Mile 7.8
- River Mile 11
- River Mile 12.6
- 1950s
- 1960s
- 1970s
- 1980s
- 1990s
- 2000s

Slices with High Dioxin Concentration

- RM 7.8, 2001 slice
- RM 11, 2001 slice
- RM 12.6, 2001 slice

Notes

The principal component analysis was run on all of the available tetra-, penta-, hexa- and hepta- dioxin and furan congeners and the homologue totals. Mass fractions were calculated by dividing each concentration value by the sum of all concentrations for each slice.

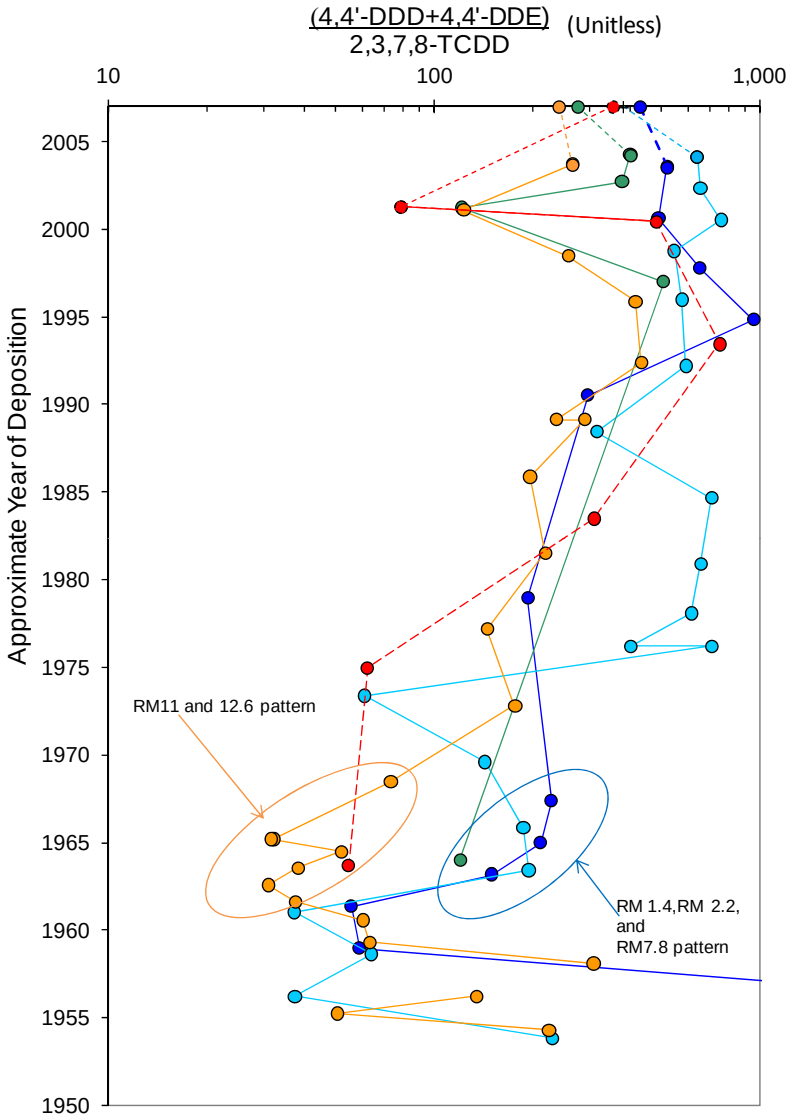
The first principal component accounts for 54% of the variance; the second principal component accounts for 16% of the variance.

First and Second Principal Components for High Resolution Core Samples

Lower Passaic River Restoration Project

Figure 15-31

2009

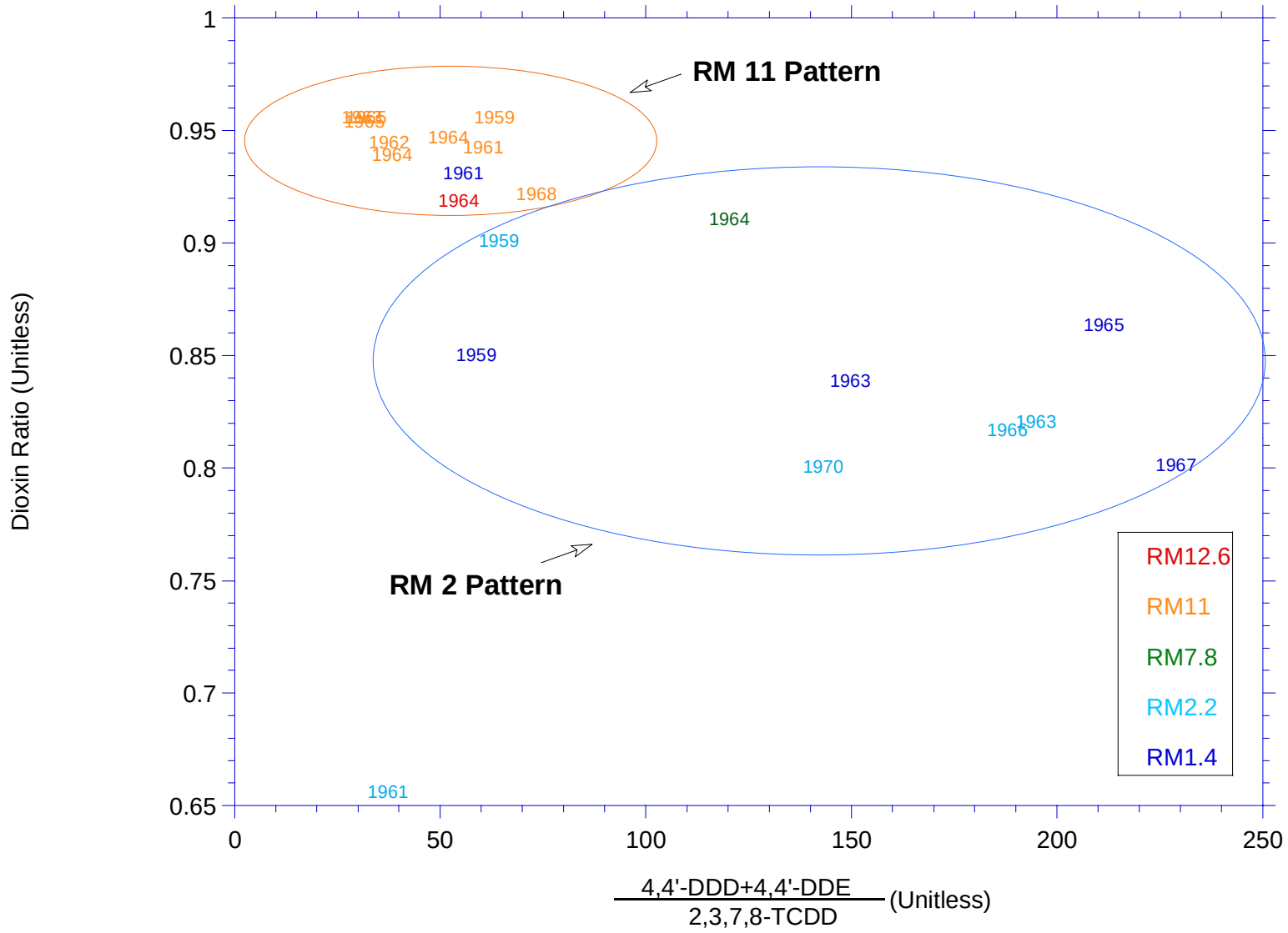


(4,4'-DDD+4,4'-DDE)/2,3,7,8-TCDD Ratio
Dated Sediment Core

Lower Passaic River Restoration Project

Figure 15-32a

2009



Comparison of the Dioxin Ratio to the (4,4'-DDD+4,4'-DDE)/2,3,7,8-TCDD Ratio for the 1960s
Dated Sediment Core Results
Lower Passaic River Restoration Project

Figure 15-32b

2009